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### Addresses.

#### THE PHYSICAL EXAMINATION IN PULMONARY TUBERCULOSIS.\*

By JOSEPH H. PRATT, M.D., BOSTON.

WHEN the tubercle bacillus was discovered it seemed to many that auscultation and percussion no longer deserved the respect and careful study that had been given to them for over fifty years in the diagnosis of pulmonary tuberculosis. The need of acquiring any degree of proficiency in these difficult arts has certainly seemed less urgent to the teachers and students of this generation than it did to those who lived in the days before Koch made his great discovery.

Within more recent times the use of the x-ray has still further lessened, in the minds of many, the importance of the physical signs. Yet, viewed in the right light, the bacteriological as well as the radiographic examinations are important aids in the study of the old physical methods and of determining their value and limitations. That this is true is shown by the

published investigations dealing with auscultation, and especially with percussion, that have been made by workers who have controlled their findings by means of the modern methods.

When one hears the value of a knowledge of physical diagnosis belittled by those who seek "short cuts" in matters medical, it is well to remember the remark credited to Friedrich Müller, one of the leading authorities in the chemical pathology of metabolism as well as in clinical medicine, that the physician's percussing finger is worth more to him in diagnosis than a whole chemical laboratory.

I would not be misunderstood. I am simply urging the importance of more careful study of physical signs, not only for the medical student, but to you as practising physicians. Taken up with enthusiasm and carried on with assiduity, it will convert the dull routine of physical examinations into a delightful search for new knowledge. I believe there are no diagnostic methods more difficult than auscultation and percussion, and none that require a longer period of diligent application; but skill in their use and application is worth the toil. Many of us have no laboratory in which to carry out investigations which seem even to the onlooker so fascinating, but every general practitioner has

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the opportunities to advance his own knowledge and that of medical science by a more painstaking and intelligent use of these old methods on the chests of his own patients. Aided by new means of inquiry, we can turn to the old physical methods with the confident hope that they will yield new knowledge. The early masters of physical methods of examination had to wait until the autopsy before their diagnosis could be verified, while workers today have early confirmation in many cases from the finding of tubercle bacilli.

We need to take up such a study in the spirit and with the diligence of the pioneer workers in physical diagnosis. Let me quote from that distinguished London physician, P. M. Latham, who did so much to introduce the new knowledge gained by Laennec into English medicine. "That everything is easy when you know it" sounds like the simplest of truisms; but indeed it is a very wise apophthegm. Its import is that, be a thing ever so difficult, you may, by taking the necessary pains, obtain such a mastery over it, as to be surprised that you ever thought it difficult at all. Auscultation surely is not the most difficult thing in the world; neither is it the easiest. It is beset with many perplexities, and requires much time, and labor, and patience, and caution, to master it perfectly; but being mastered, it becomes the safest, simplest guide, within its proper sphere, to a just diagnosis."

Although the subject assigned to me in this course of lectures is the physical examination in pulmonary tuberculosis, and although I have tried to emphasize the importance of a knowledge of the physical signs, yet I want to make it perfectly clear that in the diagnosis of pulmonary tuberculosis as an active disease and not as a pathological condition, there are other things more important than the physical signs.

I believe, with Hamman,—although he does not state it in just these words,—that a pair of scales and a thermometer are more important in the diagnosis of active tuberculosis than a stethoscope. This does not mean that the stethoscope should be discarded, but that diagnosis has too often depended on what it revealed or failed to reveal, and the scales and thermometer have not been used. That auscultation intelligently used "within its proper scope" is of great value in the diagnosis of phthisis would be foolish to deny.

That the symptoms are of more value in the diagnosis of active tuberculosis than the phys-

ical signs has been tersely stated by Lawrason Brown in the following aphorisms: "Symptoms indicate that a patient is sick, while physical signs point out only the mischief that has been done. Symptoms are a better and more accurate guide to activity than are physical signs."

Subjective symptoms, such as lassitude, persistent cough, pain in the chest, are of great importance. A history of slight but continued fever, the spitting of blood, night sweats, and the raising of sputum from the chest, and loss of weight, even in the absence of any physical signs on examination of the lungs, are so characteristic of pulmonary tuberculosis that this diagnosis should be tentatively held until by careful investigation it has been disproved. It should never be forgotten that tubercle bacilli may be absent from the sputum, even when repeated search is made for them, until the disease has become far advanced. Gerhardt cites a case in which they were found only on the sixtieth examination. To wait until a probable diagnosis of tuberculosis has become a positive one by the finding of tubercle bacilli often means the sacrifice of the patient's life or, what is to many a harder fate, chronic invalidism.

Without a knowledge of the special pathology of pulmonary tuberculosis, physical signs will be of little value. Clinically and pathologically, there are three distinct types of the disease.

1. Acute military tuberculosis.
2. Tuberculous pneumonia.
3. Chronic pulmonary tuberculosis.

The first condition, as you well know, has often been mistaken for typhoid fever. Although the lungs may be studded with military tubercle their presence cannot be discovered by auscultation or percussion. How disappointed Laennec must have been when he had to admit to himself that the new methods of diagnosis were of no aid in this type of tuberculosis!

In tuberculous pneumonia the tubercle bacilli do not form tubercles, but produce by means of their toxins a gelatinous exudation into the alveoli of the lungs over a large area, frequently an entire lobe. The exudate consists largely of desquamated epithelium, serum and fibrin. The physical signs are those of ordinary lobar pneumonia, with which disease it is often confounded in the first week or two of its course.

It is the third type that we have before us for consideration. This is the common form. The first two are, fortunately, rare. Most of the active cases of chronic pulmonary tuberculosis

can be arranged pathologically in three subdivisions, according to their clinical frequency: (1) Chronic parenchymatous tuberculosis. This usually begins in or near the apex of the lung. (2) Peribronchial tuberculosis. (3) Hilus tuberculosis. The second form usually develops from relatively small and quiescent infections of the hilus region. It is possible that many cases of apical disease are not primary in the apex, but secondary to old infections of the hilus (Bushnell). This view is supported by many radiographic plates in which shadows, due to peribronchial thickening, extend from areas of disease in the hilus to the parenchymatous disease in the apex. The clinical characteristics of peribronchial tuberculosis have been well described by Bushnell in a recent paper.

There is no doubt that the tracheo-bronchial lymph nodes of the vast majority of children are tuberculous or contain living tubercle bacilli, although they present at no time any clinical signs of the disease. Albrecht and Arnstein found either tuberculosis of the tracheo-bronchial lymph nodes or clinical tuberculosis in 87% of the bodies of 100 children from 6 to 16 years of age, who died of various diseases. In 13 of the cases the tuberculosis was demonstrated only on histological examination.

The changes in the tissues produced by the tubercle bacilli are dependent in large part on the concentration of the poison produced by the bacilli. The most common lesion is a proliferation of the connective tissue cells, an actual new growth giving rise to tubercles or to diffuse tuberculous tissue without the formation of tubercles. There may be, in addition, exudation, caseation with or without softening, and collateral inflammation. This last—the collateral inflammation—is especially important when one is considering the origin and significance of the physical signs in active tuberculosis. About a nucleus of tuberculous tissue is a relatively wide zone or area of ordinary serous, fibrinous or cellular inflammation, just as about a small active focus of pus deep in the subcutaneous tissues there will be a wide area of induration due to inflammation, reaching, it may be, to the skin. This collateral inflammation about a tuberculous focus is produced by some diffusible toxic product of the tubercle bacillus, but the tissues involved in this form of inflammation may be free from tubercle bacilli. According to Tendam, the tuberculous infiltrations in the lung which give rise to the physical signs we obtain

on auscultation and percussion are chiefly due to the collateral inflammation about a caseous nucleus. This caseous nucleus frequently is so small as to be easily overlooked at autopsy.

The fibrous tissue which forms in large amount about tuberculous areas in the process of healing is probably the result of the stimulating action of diluted tuberculosis toxins. This fibrous tissue influences the physical signs in different ways. It gives rise to shrinking of the lungs, and this leads to a sinking in of the tissues of the chest that overlie the portion of lung affected, and diminished movement of the lung during respiration. The increased density produced by the fibrous tissue is the cause of the marked dullness on percussion present over healed lesions. Bands of fibrous tissue extending to the chest wall from diseased areas in the lungs increase the conduction of sound and explain the loud breath sounds heard over old arrested areas of disease.

Before taking up for consideration the methods used in the physical diagnosis of pulmonary tuberculosis, I wish to emphasize the fact that a negative physical examination of the lungs does not exclude the presence of the disease. Physicians often are misled and their suspicions allayed in cases of tuberculosis by the absence of physical signs. This is seen most strikingly in the hemoptysis out of a clear sky that ushers in the clinical history of tuberculosis in nearly 10% of the cases. It has long been recognized "that the absence of demonstrable lesions should never lead one to declare that a hemorrhage did not come from the lungs" (Minor). In my experience it is the exception rather than the rule to find any definite physical signs of disease in patients who have had a frank hemorrhage from the lungs as the initial symptom. Yet hemoptysis out of a clear sky is due to pulmonary tuberculosis in almost 100% of the cases. New evidence of this from observations made in the post-mortem room was recently presented by Lord.

In spite of this relation between the spitting of blood and consumption, which has been known since the time of Hippocrates, how prone physicians are, even in our day, after they have made a negative physical examination, to reassure the patient with the statement that there is nothing wrong in the lungs! An hemoptysis of a teaspoonful or more of clear blood always justifies the tentative diagnosis of phthisis, even in the absence of physical signs. It should be

to the physician as clear a warning of danger as the red light is to the engineer of the swiftly-moving train.

Even in advanced phthisis I have occasionally found the percussion note normal, the respiration vesicular, and few râles or none whatever. This is no recent observation. It was known to Andral as early as 1832, and probably earlier. Listen to the quotation from a letter written by James Jackson, Jr., to the elder Jackson from Paris on January 23, 1832:

"My dear Father:

I have an hour to spare before going to bed, and as I wish to review a portion of Andral's lecture of this afternoon, I will do it by giving you an abstract of the same. . .

The general subject was the symptoms of phthisis, of which disease he has given a most learned description. . . The (percussion) sound may be everywhere normal, and this, too, during all the stages of the disease, even after the formation of cavities; as when these are deep seated. . . In many cases, or at least in some, we must acknowledge that the respiration is natural throughout the whole course of the disease. This may be while the tubercles are crude, or even after they are softened and caverns are formed, if these be deep seated. . . (Râles) sometimes none whatever. . . "

If a patient is ill with symptoms suggestive of phthisis, and nothing abnormal is found on repeated physical examinations, radiograms of the lungs should be made before one has the right to say that this disease is not the probable cause of the symptoms. Even with negative radiograms, as well as negative physical examinations, one cannot always rule out the possibility of advanced pulmonary tuberculosis. I saw such a case a year ago. There had been high fever for weeks, with great prostration and loss of weight. Repeated examinations of the chest had revealed nothing abnormal, and no evidence of tuberculosis was found in the radiograms. On my examination of the chest I could detect no evidence of pulmonary disease. Lawson Brown, who saw the patient a week later, noticed diminished expansion of the upper part of the left chest, but that was all he found of any significance. A few months later, when I saw the patient for a second time, there were signs of extensive involvement of the lungs, with dulness, broncho-vesicular breathing and many moist râles. By that time tubercle bacilli were present in the sputum.

The difficulties in the interpretation of phys-

ical signs are increased by the necessity of distinguishing between active and latent or healed tuberculosis. Nearly every adult, as we now know, becomes infected in childhood. Hence, a distinction between infection and disease must be made in dealing with the clinical aspects of pulmonary tuberculosis.

It is the clinical disease that we are called upon to diagnose and treat. Physical signs without symptoms indicate that there is no active disease, and are sometimes found in persons that are strong and apparently healthy. They are evidence only of an old infection that has produced a definite lesion in the lung. Sometimes this is a healed process, sometimes a latent one, that under conditions unfavorable to the human host, but favorable to the tubercle bacilli, will "light up" and become active disease.

Does so-called incipient chronic tuberculosis really occur in any considerable proportion of cases? The teachings on this point for the past twenty years have been very definite. No one seemed to doubt that the disease usually began in a small area at the apex, which by its development produced after a short time local and constitutional symptoms, which increased slowly, often insidiously, and were accompanied by slight but characteristic physical signs in the lungs. We believed that in every case of chronic pulmonary tuberculosis there was an early stage that could be recognized by the careful, skilful diagnostician. It was Dr. Louis Hamman of Baltimore, I think, who first expressed doubt that an incipient stage could be recognized as such in the majority of cases of clinical pulmonary tuberculosis. When the defenders of the traditional view began to look about for evidence with which to overwhelm Dr. Hamman they found, as is usually the case with teachings which everybody has accepted without question, that there was very little evidence at hand to be offered in its support.

This is an important matter to settle because so much attention has been directed in the anti-tuberculosis campaign to early diagnosis and the prompt treatment of these incipient cases.

That this question, raised several years ago, has not been answered is evidence in itself that there is still much to be learned from the careful study of cases of pulmonary tuberculosis during the period when symptoms are developing. If a relatively small number of incipient cases were carefully examined by physicians skilled in physical diagnosis, at frequent inter-



vals during a long period, and the observations recorded in detail, information at present lacking would be obtained that would not only answer this question, but would probably furnish at the same time a trustworthy guide for the physical diagnosis of incipient tuberculosis. Here is an investigation that can best be made by general practitioners, possibly by dispensary or out-patient physicians, but it certainly cannot be carried out by the clinical professors, whose work is confined to the wards, or by medical consultants.

No less a man than Sir James Mackenzie believes that the greatest opportunities for advancing clinical medicine at the present time are within the reach of family practitioners only, because they alone can study disease during its early stages and follow its progress.

The order of examination that is followed by all well-trained clinicians is that so well put by Samuel Gee in the following words: "Suppose a patient with the chest exposed ready to undergo a physical examination: the physician, first of all, carefully surveys the chest with his eye, this is Inspection; next, with his hand, this is Palpation; he next strikes the chest, Percussion; and lastly he puts his ear upon the chest, Auscultation."

To many physicians, auscultation of the lungs is the beginning and end of the physical examination in a case of suspected pulmonary tuberculosis. This is wholly wrong. The inexperienced physician, who needs most the aid in diagnosis furnished by careful inspection, palpation and percussion, is the one who neglects them most.

If proper use is made of these other methods, by the time the examiner is ready to listen to the chest, findings of such value regarding the character and location of disease will usually be obtained, that he needs only the evidence afforded by auscultation to confirm his physical diagnosis.

It is important for the practitioner who earnestly wishes to improve his diagnostic skill to proceed slowly and carefully, and to record his observations at the time he makes them. He should note down in regular order his findings on inspection, palpation, percussion and auscultation. This is especially important when the deviations from the normal are slight. I find it helpful to record my observations at the time I make them, before my opinion can be influenced by additional and possibly contradic-

tory evidence. In this way errors due to the personal equation are lessened. Furthermore, the recording of detailed findings aids one to observe carefully and accurately. If there is lack of time for thorough study, the physician should insist upon a subsequent visit. If the patient will not return, any opinion upon the probability of tuberculous disease should be withheld. Personally, I cannot remember ever having had a patient refuse this reasonable request.

*Inspection* is ranked by Lawrason Brown second only in importance to auscultation in the detection of tuberculous lung lesions. I find its value is not appreciated by most physicians, especially as an aid to the diagnosis of early, active cases.

The examination should always be made in a warm, well-lighted room. The patient should remove all clothes from the upper part of the body down to the waist, in order that the entire chest be freely exposed. The clothing about the waist is loosened, as otherwise the motion of the lower chest may be restricted or the diaphragm be pushed upward by the abdominal organs. There should be no exceptions to this rule. For inspection the patient should be seated, preferably on a round stool. The patient is instructed to relax the muscles and sit at ease. I have the patient face a window so that the light will strike directly on the chest.

*Lagging* of the upper front of the chest on the affected side was observed in 43% of my cases of so-called incipient disease at the first examination. This restricted movement occurs before there is any definite retraction of the chest wall, and is probably due to diminished expansion of the affected part of the lung. Retraction of an apex with deepening of the grooves above and below the clavicle is evidence of an old lesion. There may be considerable deformity of the chest wall without limitation of movement. If you find lagging of one apex and retraction of the other, the first is probably the seat of recent active disease, the other of an old process that may be healed. Limitation in the motion of the lower part of the chest is usually due to pleurisy.

The patient's attention should not be drawn to his respiration by asking him to breathe in any particular way. I inspect the front of the chest while standing or sitting in front of the patient. Usually lagging, if it exists, can be detected from this position. Then stand direct-

ly behind the patient, whose head should be thrown forward, look over the shoulders and note the movement of both upper fronts of the chest. Both delay in the beginning of the respiratory movement and limitation of the excursion can be readily observed. It is easy to note slight unilateral flattening of the upper chest when looking down from above and behind. After inspecting the front of the chest, the patient should turn on the stool until the back is toward the light. Then note particularly any difference in the movement of the two scapulae during quiet respiration. It is not uncommon to have restricted movement of one apex in front and of the lower back on the opposite side.

Atrophy of chest muscles, especially the trapezius on the affected side, has long been recognized. It is found in connection with old lesions. Pottenger has called attention to muscle spasm about an active lesion, which he believes to be of importance in diagnosis. The trapezius, the sterno-mastoid, and the scaleni are the muscles most commonly involved. This spasm of the muscles can sometimes be made out on inspection. The increased tone causes the outlines of the muscles to stand out more prominently than on the normal side. Pottenger's observations, it seems to me, have attracted less attention than they deserve, and the significance of this increased muscular tone and its value in the diagnosis of active tuberculosis have not been determined. It is possible that the restricted motion on respiration in early pulmonary tuberculosis, is due to spasm of the chest muscles.

General wasting of subcutaneous fat and the shape of the thorax should, of course, be carefully noted. I have been impressed, however, with the relatively large proportion of well-built and fairly well-nourished persons that develop phthisis.

*Palpation* often confirms the results of inspection regarding the respiratory movements of the chest. A diminished excursion, especially of the lower chest on one side, sometimes not made out by inspection, is detected by placing the palms gently over the lateral regions and noting the amount of movement communicated to the hands by quiet respiration.

The degree of tonus in the sterno-mastoid, trapezius, scaleni, and pectoralis major muscles may be tested according to the method described by Pottenger in his recent work on tuberculosis. My observations are too few to be

conclusive, but in certain cases of active tuberculosis I have found marked increase of the tonus in one or more of the muscles on the affected side.

*Percussion.* The value of percussion in the diagnosis of early phthisis is not generally known. This is due to the fact that heavy percussion has been practised by most clinicians since the days of Corvisart. Laennec states that percussion often yields no information in phthisis. He speaks of the difficulty of the method and says many physicians of his time were not able to bring out sufficient sound to demonstrate differences of resonance without hurting the patient with the force of the blow. It is evident, from a statement made in *L'Auscultation Médiate*, that Laennec himself used heavy percussion. Whoever it was who first recognized the value of very light percussion in diagnosis made a discovery scarcely less important than Auenbrugger himself.

Sir William Gairdner, the eminent Glasgow physician, lived and worked as a young man with the pioneers in physical diagnosis who followed Laennec. The span of his professional life reached from that generation to the present one. In a letter published about 1900 in the *Edinburgh Medical Journal*, he made the interesting observation that the medical students in Scotland at the time he wrote were taught to use a stronger percussion stroke than that employed by teachers in the first half of the last century.

I believe that George M. Garland of Boston was the first physician in America, and probably in the world, to use and teach and advocate in print, very light percussion. He has employed it for over forty years. In his classical work on pneumo-dynamics, published in 1878, he repeatedly refers to the importance of very light percussion. In the first chapter, in speaking of the curved line of flatness with pleural effusions, he says, "I must emphasize the necessity of perceiving *lightly*, and I cannot urge this point too earnestly." Dr. Garland learned the value of light percussion from experiments he made on animals. In 1874 he injected into the pleural cavities of dogs fluids capable of "setting" into casts. To mark on the chest wall the true curve of the upper level of the artificial effusion, he found it necessary to use very light percussion. Garland's method of percussion is in reality a combination of percussion and palpation, and he relies more on the sense of resistance to the fin-

ger than to the pitch of the note. The importance of percussing in vertical lines is emphasized, and the points where the notes become flat are carefully noted. Dr. Garland tells me that all his teachers in this country and abroad used a heavy percussion stroke. Dr. F. C. Shattuck early adopted light percussion and advocated its use to his many classes of students at the Massachusetts General Hospital. In some of the leading American medical schools today a heavy percussion stroke is still taught. The so-called light percussion of many physicians is heavy in comparison to the force of the blow used by those who practise very light percussion. In recent years the lightest possible percussion stroke—threshold percussion—has been recommended by Goldscheider.

I have employed for many years a percussion stroke so light that the sound it produces can be heard only a foot or two from the patient. I first used this light percussion in marking out the absolute cardiac dulness when a student in Krehl's clinic, and later employed it when I learned from Minor the importance of outlining the apical isthmus—the so-called Kroenig's isthmus—in tuberculosis. I think the tactile perception of increased resistance enters largely into this form of percussion. One hears something or nothing. To bring out the pitch distinctly, a stronger blow must be used. Percussion is certainly not a method of precision, and it must be frankly admitted that slight or questionable dulness has little significance and should be disregarded unless supported by definite auscultatory signs. Nevertheless, I have never known anyone who has mastered the technique of light percussion who was not convinced of its great value in the diagnosis of pulmonary and cardiac disease. The art of light percussion is difficult to acquire, but less difficult and more trustworthy than heavy percussion. A slight variation in the direction of the heavy stroke alters the percussion note, as Laennec observed, and different sounds are elicited by strokes of different strength over the same region.

It has been taught in America for many years by the followers of Austin Flint that the right apex is somewhat dull. So much stress is laid on this point by some teachers of physical diagnosis that their students think they can or should recognize this physiological dulness. Austin Flint, as is evident from his writings, used a forcible percussion stroke. From his

statement that in hospital practice it is necessary to use a plessimeter to prevent injury to the fingers, I think it is justifiable to conclude that he used a very heavy blow. Possibly this explains the slight dulness he noted at the right apex, which was not found by any of the other great masters of physical diagnosis before or since his time.

The cases of so-called physiological dulness brought to my attention by students were found to have a definite narrowing of Kroenig's isthmus, and hence were pathological. In most instances, other signs of tuberculosis were found. To avoid this error, regard with suspicion any definite dulness at either apex, as it is probably evidence of a tuberculous lesion. In seeking signs of apical disease, always percuss the top of the axilla. Occasionally in early tuberculosis, it will be found distinctly dull, while the note over the apex, anteriorly and posteriorly, is resonant.

In percussing the lungs it is important to mark out the lower border during quiet breathing in the lateral and posterior portions of the chest. The apical isthmus is a zone over the top of the shoulder, usually 3 to 4 cm. wide in its upper part. The inner border, which can be marked out more satisfactorily than the outer border, extends normally downward and inward from the border of the trapezius muscle to the inner head of the sterno-mastoid just above the clavicle. I have found that dulness above the inner third of the clavicle on very light percussion is an early sign in apical tuberculosis. The terminal phalanx of the middle finger of the left hand, used as a plessimeter, is placed on the skin just above and parallel to the clavicle. One should first percuss in the region above the middle of the clavicle, and then move the finger along toward the middle line, percussing as one proceeds, until the resonance disappears. In this region there is rarely much fat and the muscles are thin, hence dulness here can be made out frequently when percussion of the other parts of the apical isthmus is unsatisfactory. It should be called to mind that the portion of the lung apex above the clavicle lies between the two heads of the sterno-mastoid muscle. Hence, this area of early dulness is directly over the apex.

When a student in Krehl's Tübingen Clinic, in 1902, I learned the percussion method of determining the movability of the lower border of the lungs, and I have employed it ever since as a routine procedure in examining the lungs for tu-

berculosis. In the mid-axillary and scapular lines, the lower border of resonance is determined while the patient holds his breath at the end of full inspiration and again after full expiration. The width of the excursion is measured and recorded. If there is dullness over the lower part of the lung, it is, of course, impossible to determine this respiratory movement. It is a measure not of the movement of the diaphragm but of the lung in the pleural sinus, and is often found lessened or absent on the affected side in pulmonary tuberculosis sufficiently early to be of aid in diagnosis. In 20% of my incipient cases a limitation in the excursion was found.

In discussing what can be learned from inspection, I did not mention Litten's diaphragmatic sign, because it is of little practical value. Limitation in the motion of the diaphragm can be readily made out on fluoroscopic examination.

**Auscultation.** Whether percussion or auscultation yields the earliest evidence of the existence of pulmonary tuberculosis is still a mooted question. That dullness on light percussion is an early physical sign is shown by my own statistics. In 26, or 83%, of the so-called early cases in which I made the physical examination there was dullness; in 23, or 77%, enfeebled or abnormal breath sounds; and in 18, or 60%, râles.

It seems strange that in the 101 years that have passed since the study of the auscultatory signs of phthisis was begun by Laennec, the significance of the harsh, granular and broncho-vesicular types of respiration has not been determined. Whether they are due to catarrh of the finer bronchioles or to induration of the surrounding tissues, is still unsettled. Here certainly is a profitable field for study.

In the past twenty years too much attention has been paid in diagnosis to slight changes in the respiratory murmur. I refer particularly to harsh inspiration and the granular breathing of Grancher. The physical signs found in a healed or arrested lesion are often mistaken for those of active disease. Years after all symptoms have disappeared, dullness, associated with harsh, granular, or broncho-vesicular breathing may persist. Piéry and Bushnell believe that these modifications of respiration, which are generally regarded as early signs of tuberculosis, are more frequently found after induration of the tissues has taken place. In the absence of râles, they would interpret broncho-vesicular breathing as an indication that the lesion was inactive.

Lack of time forbids an extensive considera-

tion of râles, although their presence is the surest indication to be obtained on the physical examination of the chest that active disease exists. The ability to recognize all the deviations from the normal, that I have mentioned, is not to be expected from every practising physician, but no one is qualified to examine a chest at all if he cannot recognize râles. Yet I wonder how large a proportion of hospital physicians or tuberculosis specialists could state clearly the difference between crepitant and sub-crepitant râles, fine, moist râles and crackles. Yet these are distinctions of importance that were all recognized and described by Laennec within a period of three years following the discovery of auscultation, and he had no one to teach him except Nature.

The importance of coughing as an aid to the detection of râles should be emphasized. First listen over a region with the patient breathing quietly; then direct the patient to exhale, cough, inhale. My friend, Dr. Horace Gray, has called my attention to the fact that Laennec recognized that coughing was of value in bringing out râles, and that the cough should not be too forcible. Turban speaks of a patient who, having been examined by a great many physicians, based his judgment of their merit on whether or not they had made him cough during auscultation.

Fine, persistent râles, limited to one portion of the lungs, are regarded generally as the first trustworthy physical sign of active disease. But it must not be forgotten that localized râles may persist for months and years after a patient has recovered his health. I have watched a number of such cases for several years in fear that the persistence of moist râles indicated impending trouble, but no symptoms developed. In one case with a past history of active disease, I heard at every examination many fine, moist râles over the left lower lobe during a period of two to three years before the patient's death. The autopsy showed healed tuberculosis of this lobe, with no evidence of recent disease.

Wishing to be guided by facts and not by impressions of what I had personally observed, I had my findings on the physical examination of thirty cases, classed as incipient, collected and analyzed as an aid in the preparation of this talk. The figures show something of interest, but I doubt if it would be correct to regard all of the cases as examples of early active disease. They were selected from a large series of cases treated, for the most part, in my

tuberculosis class. As I wished to use the series in reporting the effect of treatment, I was unwilling to classify them myself as incipient, moderately advanced and far advanced, and so I had my associates do it for me. In their zeal that no case be placed in a more advanced stage than it properly belonged, and thereby make the results of treatment appear better than they ought to appear, I think you will agree with me, after examining the table, that they went too far.

TABLE.

PHYSICAL SIGNS IN 30 CASES OF SO-CALLED INCIPIENT PHTHISIS.

Lagging of the affected side . . .	13 or 43%
Dulness . . . . .	28 or 93%
Narrowing of apical isthmus . . .	26 or 87%
Abnormal breathing of different types . . . . .	23 or 77%
Enfeebled breathing . . . . .	10 or 33%
Harsh breathing . . . . .	6 or 20%
Granular breathing . . . . .	3 or 10%
Cog-wheel breathing . . . . .	3 or 10%
Broncho-vesicular breathing . .	8 or 28%
Bronchial breathing . . . . .	3 or 10%
Rales . . . . .	18 or 60%

Most of these cases were examined a short time after definite symptoms developed. The variety and character of the physical signs presented in this group make it evident that many of these were cases in which there had been no early stage in the clinical sense (Hamman).

A study of the temperature, with readings made and recorded every two hours from 8 a.m. to 8 p.m., is a better guide in determining activity of the disease than the physical examination. There is usually some elevation of temperature in the early stage of tuberculosis, which may occur only for a period of a few hours daily, hence the need of making frequent observations. Even before physical signs develop, fever may be present. An increase in the daily range, even when the maximum temperature is not above normal, is of diagnostic value in pulmonary tuberculosis.

Time does not permit of a discussion of the pulse, but acceleration is an early sign, and the rapid rate frequently persists after the temperature has dropped to normal.

The conclusion to be drawn from this whole matter of the relation of physical signs to diagnosis is well stated by that great master of medicine, William Stokes. His words are as true and as applicable today as when they were written in 1837:

"It cannot be too often repeated that physical signs only reveal mechanical conditions, which may proceed from the most different

causes; and that the latter are to be determined by a process of reasoning on their connection and succession, on their relation to time, and their association with symptoms; it is in this that the medical mind is seen. Without this power I have no hesitation in saying it would be safer wholly to neglect the physical signs, and to trust in practice to symptoms alone."

## THE STANDARDIZATION OF HOSPITALS.\*

By CHARLES A. DREW, M.D., WORCESTER, MASS.,  
Superintendent, Worcester City Hospital.

At the January meeting of the Trustees, a communication was read and a questionnaire considered coming from the American College of Surgeons, relating to a proposed standardization and classification of hospitals in the United States and Canada.

It may be worth while to review the reasons for the proposed "standardization" in the interest of a clearer understanding of this important project. It is alleged that by reason of curable defects, the majority of hospitals are not doing the good work they should be doing. While it is granted that the small hospital of limited means cannot do all that can be done by the hospital with many beds and a large income, it is held that the defects do not correspond to size, nor always depend on poverty. Faulty organization, a poor equipment and some other things are, it is claimed, more often responsible than is poverty.

It does not appear that the College of Surgeons is aiming at autocratic dominion. The College does not ask for legislative powers to coerce, and it professes to believe only in constructive and helpful criticism. This same project has been discussed by the American Hospital Association at several sessions, so that it is not a new subject to well-informed hospital workers. We fancy there are few who will deny that much good may grow out of this proposed standardization and classification. The argument runs something like this: The comfort and complete recovery of the patients is of first importance. The advancement of the science of medicine and surgery, the teaching of internes and nurses, and the welfare of these student physicians and nurses while being taught are also very important considerations. No hospital

\* Presented, in abstract, at the February, 1918, meeting of the Trustees of City Hospital, Worcester.



that cannot make a fair showing in each of these important functions can expect to be considered a "Class A" hospital.

It is held that a fair judgment may be had of the work of a hospital by the care with which its work is recorded. Hence it is that case records count for much to credit or discredit a hospital.

It is alleged that only a few hospitals have an adequate "follow-up" system, without which no one knows how many of its discharged patients ever do fully recover. It is alleged that neither the managing board, the surgeon who operates, nor the superintendent in the average hospital, is likely to know what happens to a patient after he leaves the hospital, unless he returns for further treatment.

It is charged that "we put young graduates into your hospitals as internes and nobody teaches them." "They are left to run at their own sweet wills, provided they don't get in the way of the machine,—either the administrative or the medical machine, each of which rolls through the institution on its hurry-up schedule,—and provided also that they (the internes) do a certain amount of routine work." "Nobody is responsible for their education." "They gather crumbs, as it were, from the rich man's table—chiefly the operating table! But so far as systematic training is concerned they do not get it." "If they 'learn by doing,' either they've got to have critical guidance (teaching) or else the patients will suffer."<sup>2</sup>

It is claimed that, in the majority of hospitals, many patients do suffer because the managing board requires almost no accounting from a member of the staff once he is appointed, and because the staff, speaking broadly, do not examine the work or the medical records made by the internes, critically. It is claimed that this system—which might be called a faith system because based on the far-reaching quality of faith—is not business-like and, as applied to hospitals, does not lead to "the substance of things hoped for"; nor is it likely to produce "evidence of things not seen." This may be said, however: that it is greatly to the credit of the young medical men serving as internes in hospitals run on the faith system that responsibility does usually stimulate eight internes out of ten to do good work, in spite of a lack of systematic instruction. But there comes a time, too frequently, when the one or two of the ten

become seniors and exemplars for younger internes. Then it is that the want of systematic and careful supervision works harm to patients and to the reputation of the hospital. It is among the counts of the indictment that the managing board of a hospital run on the faith system never drops a member of the staff, once appointed, until he has reached a fore-ordained age limit. It is also charged that no member of the staff ever recommends the release of an interne because of neglect of duty. This evidence of faith and charity seems to the critics too one-sided. They claim that too much faith and charity on one side gives the patient a "raw deal."

It is urged, by way of argument, that no business enterprise can hope for success unless the directors, either by personal examination, or by proxy, keep in touch with the quality of the work turned out by the several artisans and experts whom they appoint to responsible positions. It is urged, further, that it is unreasonable to expect an interne to do his best in making records that he knows are not likely to be read by staff or trustees, at least while he is connected with the hospital. It is claimed that a busy visiting surgeon, depending on an exacting private practice for bread and butter and means to support and educate a family, is not likely to spend the necessary time to organize and maintain a "follow-up" system which is pretty sure to lapse into desuetude as soon as the service is turned over to his less painstaking colleague. Hence it is argued that "it is as easy for a camel to go through the eye of a needle" as for a hospital to do its best work under the faith system of organization.

It seems that these reformers are not depending on theory alone; many of the propagandists have had practical experience. Many of them have had responsible positions as visiting surgeons or physicians to large hospitals. Some have had experience in trying to maintain a "follow-up" system and a teaching system, to see it lapse and all their efforts go for naught when the service changed. We may suspect that this campaign is inspired by the remorseful spirit of some departed surgeon, like Hamlet's father's ghost, "doomed for a term to walk the night and for the day confined to fast in fire". Perhaps!—We cannot, however, find a scrap of evidence to support this fancy.

In all seriousness, it does seem worth while to know where we stand in the eyes of disin-

<sup>2</sup> E. P. Lyon, Ph.D., M.D., Minneapolis.

interested and competent critics. If a business system, with its checks and safety features, can be applied to professional work, those who trust in us, ought, of course, to have the benefit of such a system. If the faith system is not the best system for the patients, of course it ought to go. A business system is a system of checks and audits. A faith system applied to hospitals trusts that the superintendent and every member of the staff, once appointed, will do his best without any auditing or supervision of his work by the managing board. A business system insists that all the activities of the hospital shall be audited and a report made to the managing board at the board's regular meetings. The faith system, according to the reformers, is entrenched in the ancient castle of conservatism, over the entrance to which might be written, "As it was in the beginning, is now and ever shall be." A business system owes no allegiance to a "slipshod" system because of the latter's honored lineage. The reformers insist that the end-product of professional work is quite as important as the economics of the hospital, and that the professional work will not rise to its highest level until it is audited, and followed up with regularity by a competent auditor or an auditing committee, which reports to the directors regularly.

Such are some of the arguments of reformers, voiced in different phraseology, from many sources. The reformers may not be all equally well informed, they do not agree in all things, nor do they all speak with equally fair moderation. Doubtless there might be something said on the other side.

The business system applied to professional work is of comparatively recent origin. Most of the progress in medicine and surgery for the past hundred years has been made under the "faith" system. We admit that much has been accomplished. "In spite of the system" the reformer retorts,—but we know that the "honor system," much extolled by psychologists, is a near kin to the "faith system." Under a sense of responsibility and honor the best men do their best work, regardless of praise or blame. Stimulated by a sense of honor and responsibility, young men fresh from medical schools have done first-class work and faithfully written comprehensive time-consuming records, with no expectation that these records, with occasional exceptions, would be praised, blamed or even read by the chiefs of staffs.

We know that it is not essential for a man to hold a professorship in a medical school to be a teacher, even a first-class teacher. We have such men on our own staff. In appointments and promotions, it may be true that the teaching qualifications have not been sufficiently considered. We have no sympathy with the idea, sometimes asserted or implied, that a municipal hospital is handicapped and must be handicapped, by political considerations. When the trustees of a hospital accept and adopt the principle of a "closed" staff, they invalidate every excuse for inefficiency. Efficiency is the one adequate defense of a "closed" staff for a municipal hospital. When 50 men are selected from a profession numbering 300, because of their supposed fitness and given special privileges in a municipal hospital, denied to the 250 remaining members of their profession, they assume grave obligations, and the directors assume the responsibility of holding them to whatever system observation and experience prove to work out best for the patient. This, we think, will be accepted as a self-evident truth whether or not we endorse all the ideas approved by the American College of Surgeons. Whether or not any change in our own organization is recommended, we should dissent from any implication that a municipal hospital, *per se*, is handicapped by political considerations. Nothing in the history of our hospital warrants such an assumption. Nothing in the past tends to show that the people of our city do not want the best for their money. Nothing indicates that the citizens of any live municipality will fail to back the trustees in any move for the betterment of their hospital service,—providing, of course, that the hospital has not been made to serve the political fortune of any city or hospital official.

While we believe this is the simple truth, we are mindful that medicine and surgery are not exact sciences. We realize that the temperament and constitution of each patient are important factors—often unknown quantities—in the equation. We know that it will require a broader judgment to audit professional work than it does to audit the financial activities of a hospital. And yet, the claim is made that it can be done without hurting any man unless it may hurt the feelings of the hypersensitive. How best and by whom may professional work be audited and results followed up is an interesting problem for each hospital.

The viewpoint of an able and sensitive surgeon,

who has given years to the service of a hospital working under the faith system,—which he regards as an honor system,—may be different from that of the reformers. He may see no reason why his time, much in demand, should be given to details plus the reading and criticizing of case records. He may be willing to teach objectively, but not by time-consuming precept. He may feel that teaching, in its ordinary sense, should be left to those with adequate salaries,—to those not dependent for an income on an exacting private practice. He may feel that the audit system cannot be fairly applied to professional work unless an auditor be provided endowed with omniscience. His experience with professing reformers may cause him to misjudge the campaign in prospect.

The American Medical Association, the Catholic Hospital Association, the American Hospital Association, and the Massachusetts Medical Society are enlisted for the reform as allies of the American College of Surgeons. Each organization has a committee to help the hospitals in the study and solution of the problems involved.

### Original Articles.

#### SURGICAL SUTURES AS CAUSES OF WOUND INFECTION.

By W. H. WATTERS, A.M., M.D., BOSTON,  
*Boston University.*

A BRIEF paper upon a subject that at first thought appears so trite, may seem entirely unnecessary at the present time. So frequently has there been an apparent misapprehension of the facts involved, even by some of the most progressive surgeons, that a few paragraphs upon the topic will not be amiss.

During the past twenty years the writer has been in continuous and intimate connection with laboratory work, and during this time has made literally thousands of tests of various kinds of suture material. He has also made bedside and bacteriological studies of large numbers of patients with surgically infected wounds, and has endeavored to trace them to some adequate cause. As a result, much useful information has been obtained, some of which it will be endeavored to hereby set forth.

Of the various sutures commonly used, catgut, silkworm gut, silk and, more recently, linen, are

the principal. And of these, catgut, in one form or other, is the most important.

Why the name "catgut" was ever given to this product of the sheep's intestines is an unsolved problem, inasmuch as cats' intestines, similarly treated, do not make good or satisfactory sutures. These intestines, suitably cleaned while fresh, and immersed in a preservative, are sent to the catgut manufacturer as soon as possible. They are then passed through the scraping machines, again cleansed, and the resultant filamentous tubes twisted with one, two or more other tubes, dependent upon the size required. These strands are then fastened in a horizontal position, somewhat stretched, and allowed to dry, the fat having been previously extracted by suitable means. They are then polished, cut down, graded and put through one of the various procedures for sterilization. It should be noted that each length of catgut represents all that is left of an entire piece of intestine of equal length. As such it represents a potential central space or cavity that has in the past been the container for fecal material, a great bulk of which is, of course, bacteria. It is easy to understand the difficulty of properly cleansing the interior of such a tube that cannot be laid open. Large numbers of these bacteria must, therefore, inevitably be carried into the dried product, even under the most favorable circumstances. Among these bacteria are often found tetanus bacilli and spores and other very resistant forms of bacterial life. In the sterilization of the product, therefore, it is essential to use measures that will kill not only the ordinary bacteria, but those must be utilized of sufficient power positively to kill every form of bacterial life, however resistant.

Catgut is, therefore, most difficult of sterilization. Silkworm gut, a somewhat analogous product from a certain variety of silkworm, is less liable to serious infection on account of the very different bacterial flora of its producer. It is more readily sterilized. Linen and silk are even more easy to render aseptic, both because they are originally more clean and because they can withstand procedures positively ruinous to catgut. All sutures, before being suitably prepared, must be subjected to conditions definitely fatal to anthrax and tetanus spores and must thereafter be protected from any possible infection till ready to use.

What are these conditions? Spores are much more resistant to unfavorable conditions than

are bacteria, and procedures readily fatal to the latter have no deleterious influence on the former. Thus, while most bacteria succumb to a short exposure to 65-70° C., many spores can withstand a temperature of 120° C., 130° C., or even 145° C. for a certain time. A similar variation is seen with chemical disinfection. It should be here noted that for a proper sterilization of any suture, conditions must be brought into action far more rigorous than those necessary to kill the non-spore-bearing bacteria.

Now let us look briefly at the bacteria of wound infection. What are the most common? The answer promptly comes,—the groups represented by the staphylococci, the streptococci, and the colon bacilli. Of these, the staphylococcus group is encountered much more frequently than all the others combined; either in the doubtfully virulent staphylococcus epidermidis albus, or the more active staphylococcus pyogenes albus, or the more intense staphylococcus pyogenes aureus, one finds a rapidly growing but absolutely non-sporogenous organism, and one whose resistance to unfavorable surroundings is limited. Heating to 100° C. (boiling) will definitely kill them in ten minutes, while 80° C. for five minutes, or 55° C. for one hour, is equally efficient. From the standpoint of antiseptics, a 1% carbolic kills in 30 minutes, as does a 1-200 peroxide of hydrogen and 1-1000 mercuric chloride. Even 50% alcohol proves efficient in a few hours. If the staphylococcus is readily killed, our problem with the streptococcus is much easier, as its vital resistance is even less. Twenty minutes' exposure to a temperature of 55° C. is definitely fatal, while the various antiseptics enumerated above prove efficient in from one-quarter to one-half the time required by the staphylococcus. Except for its ability to withstand weak acids, the colon bacillus ranks in vital resistance with the streptococcus. All three of these organisms, therefore, have been shown to be easily and readily eliminated by either thermal or chemical means, either of which is inexpensive. Simple boiling (of boilable material) or sufficient immersion in alcohol or other common antiseptics is entirely efficient for the purpose of excluding these organisms. Please note that this is no plea for simple and perhaps careless disinfection,—far from it. These measures, effectual though they may be against the pyogenic organisms, are not by any means capable of destroying all spore-bearing bacilli, and so should never be depended

upon alone. If they are, other diseases, tetanus in particular, are bound to appear.

The plea of this paper is to recognize the fact that in our endeavors positively to eliminate sporogenous bacteria we go far beyond the point where any of the ordinary pus-producing organisms could exist. Of course sutures, like any other material, can be improperly handled after coming from the sealed container, and thus prove infectious. Also a suture, by being too tightly tied, may favor development of some slightly virulent skin staphylococci in the resultant improperly nourished tissue.

Apart from these contingencies, entirely due to others than the manufacturer, one may say that ordinary wound infection due to the sutures employed is an occurrence that may be entirely disregarded. Instead, therefore, of first bringing the suture material into question in a case of wound infection, one may say that the chances of such being the cause are so slight as to be entirely negligible.

#### A PLEA FOR A QUICK BACTERIOLOGICAL DIAGNOSIS OF DIPHTHERIA.

By E. A. BECKLER, BOSTON.

*Bacteriologist, Massachusetts State Department of Health.*

THE bacteriological diagnosis of diphtheria is now made practically throughout the country. Methods of examination of cultures, however, differ considerably in different laboratories. The usual custom is to examine cultures that have been incubated from 12 to 14 hours, and usually Wesbrook's A & C & D types, granular and barred, are looked for. Löffler's methylene blue seems to be the usual stain used, on account of its simplicity, although the Neisser and Kinyoun stains have considerable vogue. The latter are of especial value in accentuating the granules usually present in some bacilli of every culture. The writer believes that positive cultures are incubated longer than is necessary in many laboratories before a diagnosis is made. The custom of the Massachusetts State Department of Health is to examine all swabs that are sent for diagnosis for diphtheria. No blood serum is sent out to physicians, because it has not been found possible to keep the State supplied with fresh, moist serum. A culture is made at once upon receipt. Before replacing the swab in its tube, the material left is smeared

in a small drop of water on a slide. This takes but little time, as long slides, on which 12 to 15 smears can be put, are used. These are stained with Löffler's methylene blue and examined. As many as are positive are reported at once by telephone to the attending physician. The cultures that have been made are then examined in the afternoon after from 1 to 8 hours' incubation. As the mail is received several times during the day, the cultures are of different ages. For this second examination, a very small drop of water is used, and the smear spread out only slightly so that the growth may be concentrated in a small area. Certain cultures which have not shown the bacilli on the swab, are often positive after a few hours. For this diagnosis one relies on the typical shape and grouping of the bacilli. Granules are not shown as a rule, so that special granule stains are of no value. *B. diphtheriae* in a young culture is very characteristic, however, and it usually outgrows other bacteria, including diphtheroids, during the first few hours, so that it is more readily seen than in some older cultures.

From an examination of over 30,000 cultures received for diagnosis, of which over 3000 have been positive, it has been possible to diagnose 83% of these the day the cultures were received, 60% on the swab, and the remainder from cultures from 1 to 8 hours old. The 17% that have not shown the bacilli on the swab or young cultures have been, for the most part, cultures received in the late afternoon, which have not shown growth before the laboratory closed for the night. Perhaps if physicians made a special effort to take good cultures, a larger percentage could be reported the day of receipt. No negatives are reported until they have been incubated at least 14 hours. The State Laboratory receives cultures principally by mail, so that there are inevitable delays before the culture is received. For this reason, this method has been adopted, so that there shall be as little delay as possible in the laboratory. It would seem as though local laboratories should be able to report practically all positives the day the culture is taken. Undoubtedly mistakes are made, but there are probably no more than would be made with older cultures. Often a culture that has been very characteristic at five hours is almost overgrown with other organisms after 15 hours, and might have been called negative if careful search had not been made for the bacilli.

There are no new suggestions offered, but

laboratories that have not become accustomed to the appearance of young diphtheria cultures, are urged to examine them. The time spent in this triplicate examination is slight compared to the probable value of an early bacteriological diagnosis of diphtheria.

## THE MODERN TREATMENT OF TUBERCULOSIS.

BY H. F. GAMMONS, M.D., CARLSBAD, TEXAS.

THE treatment of tuberculosis at the present time should be considered under two headings: firstly, treatment by the general physician, and, secondly, treatment by the tuberculosis specialist. There should be a closer coöperation between the general practitioner and the tuberculosis specialist in the future than there has been in the past.

The average patient is unable to employ a specialist, but the specialist could see the patient at intervals and outline to the patient's physician a line of treatment, and by this coöperation of the specialist and general physician there will result greater good to the patient, and increased confidence in the general physician by the patient.

We realize that a great amount of the good to be accomplished in the anti-tuberculosis campaign must be due to the efforts of the general physician. It is not necessary for him to know the pathology, physiology, etc., of tuberculosis, or to be able to interpret the finer physical signs in the chest or, furthermore, to administer artificial pneumothorax or tuberculin. However, it is necessary for him to know the fundamentals of correct and early diagnosis and treatment.

Hawes' of Boston shows how the general practitioner can best make an early diagnosis, by observing the constitutional symptoms, rather than by trying to discover broncho-vesicular breathing or crepitant râles, however desirable the latter course might be.

The general physician of today and the past has over-treated his tuberculous patients, and has used the methods of treatment—good, bad and indifferent—that any or all authors have advocated. Tuberculin fell into disrepute on account of this very reason. The general physician felt that he had a cure in this agent, and used it in all cases, regardless of the condition, and as a result he caused a sloughing off of tissues that could have been repaired, and a dis-



semination of the disease, with resulting fatalities.

Unfortunately, the same condition exists today, namely, that many doctors are giving tuberculin to all of their tuberculous patients, regardless of the indications, and in their enthusiasm they are pushing their patients nearer the grave. I have recently seen a number of cases of pulmonary tuberculosis who have been treated by tuberculin by their general physician, and practically all of them have been apparently made worse.

I do not want to lead one to believe that tuberculin is not to be used at all, for such is not the case. A review of the literature shows many fine results in all forms of tuberculosis treated by tuberculin, but here it was administered by the specialist.

It is not expected that the general physician, with his numerous duties, can be thoroughly acquainted with all the sciences of tuberculosis, and, not being able to interpret the effect of different treatments, he should not use them. Every case of tuberculosis should have every possible help in getting well, and it is by the co-operation of the general physician and specialist that such things will be made possible and great mistakes will be prevented.

Ever since the rest treatment was advocated in this country by Trudeau many have realized its importance. However, there are many who have advocated the outdoor air and exercise as the most necessary factors in arrest of tuberculous processes. Still others have advocated rest and graduated exercise. Pratt<sup>2</sup> emphasizes the importance of prolonged bed rest in treating tuberculosis. I believe the physiological effect of exercise is more beneficial to some cases than is rest, but as it is impossible to pick out these cases, and as rest cannot do harm, it is advisable to have plenty of rest, according to the patient's make-up, some doing better resting in a reclining chair, and others resting better in bed.

As soon as the diagnosis has been made, the general physician should institute treatment, which is, as a rule, rest, and he should educate and guide his patient continuously. Too many physicians have made the diagnosis, and then given the most general and superficial advice, and have implied by their words that it is now up to the patients to do as they have been told. The tuberculous patient needs a guardian, and this is the part that the good sanatorium plays in the patient's cure.

The general physician should see that his tuberculous patient has rest in bed, fresh air, well-mixed diet of moderate amount, sunshine, optimism, and frankness.

The general physician should not give tuberculin, vaccine, artificial pneumothorax, creosote or exercise, unless by the direction of the tuberculosis specialist.

Opiates are often indicated for uncontrollable cough and hemorrhage, but a continuous hemorrhage can often be best relieved by artificial pneumothorax. Rest will cure the night sweats, cough and pains in the chest; rest will also decrease the sputum, as well as stop all toxic symptoms, and nature will do the rest in the ordinary case by developing fibrous walls around the tubercles and calcifying the necrotic areas.

The part the specialist plays in the treatment of tuberculosis is the application of the natural processes laid down for the use of the general physician, supplemented by the use of artificial pneumothorax, tuberculin, vaccines, laryngeal treatments, surgery, and graduated exercise.

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<sup>1</sup> Hawes: Constitutional *vs.* Local Signs and Symptoms, etc., BOSTON MEDICAL AND SURGICAL JOURNAL, March 1, 1917, Vol. cxxvi, No. 9.

<sup>2</sup> Pratt: Importance of Prolonged Bed Rest in the Treatment of Pulmonary Tuberculosis, *Amer. Rev. of Tuberculosis*, January, 1918.

## Medical Progress.

### PROGRESS IN GYNECOLOGY.

By STEPHEN RUSHMORE, M.D., BOSTON.

#### *Vesicovaginal Fistula.*

FRANK<sup>1</sup> discusses the principles governing the spontaneous closure and operative repair of vesicovaginal fistulae. Nineteen cases are reported, which were operated on by several surgeons at the Mt. Sinai Hospital, and three in which the fistula closed spontaneously. The preparation of the patient for operation and the operative technic are described. Frank emphasizes the fact that free mobilization of the bladder is the most important single condition for success. If the bladder is freely movable the fistula will doubtless heal spontaneously in many cases. An inverted T incision, as for interposition of the uterus, is most satisfactory as a routine procedure. Suture is usually in two layers with chromic catgut and silk. If there has been destruction of the urethra or vesical sphincter, and repair is almost impossible, inter-

position of the uterus gives the least unsatisfactory result. In one case a minute fistula, persisting after the closure of a large hole, healed, following treatment with the d'Arsonval current for ten seconds. Following the operation the retention catheter should be employed and if a leak develops, the use of the catheter should be employed for several weeks.

Ward<sup>2</sup> discusses the operative treatment of inaccessible vesicovaginal fistulae. Such lesions he thinks are becoming more frequent owing to the more common use of the extended operative removal of cancer of the cervix, and the introduction of the Percy cautery. The method which has been used by Gray to obtain adequate exposure is the Schuchardt paravaginal incision which is well illustrated and contrasted with the more frequently employed "episiotomy." This incision is properly emphasized as "our most effective means of obtaining free access to the vaginal vault for operative procedures in difficult cases."

Free mobilization of the bladder is also necessary, and may be obtained most easily by establishing a plane of cleavage between the uninjured vesical and vaginal tissues. To establish this plane a crucial incision is made in the anterior vaginal wall, beginning near the urethral meatus and having its transverse bar at the fistula. By freeing the vagina from the bladder near the urethra first and gradually dissecting upward to the fistula, this object is accomplished. The use of a sound in the bladder to displace the bladder injury downward is recommended. In suturing, if the two lines of suture, bladder and vaginal walls, are not superimposed, the chances of healing are decidedly better. Three cases successfully operated on are reported and there is a brief review of some points noted in the literature.

Peterson<sup>3</sup> gives a method of treatment for inoperable vesicovaginal fistulae. It is not original with him, but a search in the literature indicates that attention should be drawn again to its value.

By inoperable cases are meant those in which the sphincter of the bladder is destroyed by trauma of childbirth, operation for cancer of the urethra, or any other cause. If the sphincter is destroyed, even if the fistula may be closed, function cannot be restored. The operations for transplanting the ureter into the bowel are generally unsuccessful because of ascending infection. The Maydl operation, using a part of the bladder

wall around the ureteral orifice, is the best, but it is a serious operation with a distinct mortality.

The method advocated by Peterson is the formation of a rectovaginal fistula with closure of the vagina at its outlet, below the fistulae. Forty-one cases in all are collected and reported briefly. The operative procedures are not dangerous, and the results are satisfactory for a condition which does not threaten life but makes it very miserable.

Primary union is difficult to secure, but the wound nearly always healed finally. The rectovaginal fistula shows a tendency to contract, so that it should be made large,—large enough to admit two fingers easily. The rectum can be used as a substitute for a urinary bladder without giving rise to a rectal irritation. The urine does not give rise to uncomfortable diarrhea, although the stools are somewhat softened by the urine. At times small amounts of liquid feces are passed with the urine. The urine is held for two or three hours as a rule, sometimes for only one, sometimes six hours.

Of special interest are the effects on the uterus (in case of menstruation) and on the kidneys. There is no evidence that infection of the endometrium or of the kidneys takes place. The disadvantage of the operation, that copulation becomes impossible, in general would not weigh heavily against the patient's great comfort from urinary continence.

#### *Prolapse of Uterus.*

The occurrence of uterine prolapse in children is of such unusual occurrence that Pollock<sup>4</sup> reports a case which came under his observation. The patient was a negro of 13 in whom a vaginal protrusion had been noticed since 8. This had become much more pronounced of late and was troublesome on walking. Both vaginal walls and the elongated cervix protruded from the vulva. The uterine body was in ante flexion and within the pelvis. On pushing back the prolapsed organs it was found that the puborectal portions of the levator muscles were atrophic.

The operative treatment consists of anterior colporrhaphy with oval denudation, perineorrhaphy according to the method of Emmet, and laparotomy.

On opening the abdomen the uterus was found to be small and ante flexed, the ovaries were cystic, the tubes infantile in type and the seat of purulent inflammation (gonorrhea). The

posterior cul-de-sac was very wide and deep and filled with intestine.

To prevent the intestines from entering the cul-de-sac it was obliterated in sections from below upward. The posterior peritoneum was attached directly to that of the posterior surface of the broad ligaments. After resecting the tubes the uterus was tipped forward by suturing the round ligaments over the tubal stumps.

Three months later the anatomical result was very good except that the uterus lay in first degree retroversion, perhaps owing to the pull of the sigmoid which had been attached to the uterus in obliterating the cul-de-sac. Two points are especially to be noted. There was a distinct levator action, though at the time of the operation it seemed as if the levators were absent. Also the pelvic cavity was free from intestines.

Prolapse of the uterus in children is due to defective development, and spina bifida is the developmental anomaly most frequently found associated with it. Although x-rays were taken no trace of spina bifida could be found in this case.

Other anomalies, however, were present,—a wide and deep cul-de-sac, infantile tubes, pelvis infantile in shape and size. The spinal column and the lower extremities were deformed, the hard palate was highly arched and the mentality of the patient was far below normal.

Williams<sup>5</sup> reports a case of prolapse of the rectum associated with prolapse of the uterus, and notes the principles to be kept in mind in operating.

The patient was a multipara of 40 who, 14 years before, at her first labor terminated by instrumental delivery, received a complete tear of the perineum which did not unite.

For five years there had been prolapse of the uterus, for one year of the rectum also, which had been irreducible for one week.

On examination, the patient was found to be in poor general condition, with complete prolapse of the uterus and vagina, and prolapse of the rectum for seven inches outside the anus. The complete tear extended one inch up the rectal wall.

The operation was performed in three stages. At the first the prolapse was reduced under ether. About three weeks later the abdomen was opened and the whole uterus removed. The vaginal walls were suspended to the anterior sheath of the rectus abdominis. The upper portion of the rectum and the sigmoid were sutured

to the posterior wall of the vagina and to the abdominal wall, thus fixing the bowel and obliterating the cul-de-sac.

At the third operation the perineum was repaired.

Fourteen months later the patient said she had been well since the operation, and has had no recurrence of prolapse or cystocele. Perineum solid, good sphincter control. Small hernia in laparotomy scar (incision suppurated following second operation).

While mild cases do not need such extensive operation, extreme cases demand treatment similar to that given in the author's case, and based on the following principles:

- (1) Ventral fixation of the pelvic fascia (Williams prefers to remove the whole uterus first, but this is not always necessary).
- (2) Fixation of the rectum to the pelvic fascia.
- (3) Obliteration of the cul-de-sac.

All operations should be completed by repair of the sphincter ani and perineum, if damaged.

#### *Fatty Tumors of the Uterus.*

Elkin and Haythorn<sup>6</sup> report a case of fatty tumor of the uterus and review the literature briefly. Fatty tumors of the uterus are so rare that they are of little interest clinically. Yet from the point of view of histogenesis they may attract much attention. The term "fatty tumor" rather than "lipoma" is used because of the specific meaning of the latter word, and the difficulty in determining in some of the fatty tumors described whether they were truly lipomata.

Fat cells are perfectly definite cells, differentiated from mesenchymal cells and are neither fibroblasts nor derived from fibroblasts. As no fat cells occur embryologically in the uterus, a true lipoma must be formed from embryonic displacements of fat cells.

"The difficulty lies in our inability to say that the large fat cells were not derived from connective tissue cells. The fibrogen fibrils, which are the only definite means of identifying connective tissue cells, could not be demonstrated in connection with fat cells, and aside from the globular fat contents we know of no characteristic structures by which to identify a fat cell, so that we could not be sure that after all we were dealing with true fat cells."

After carefully analyzing the evidence which this tumor presented, Elkin and Haythorn came to the conclusion that it was best explained by the hypothesis of lipoblastic development and that the tumor should, therefore, be called a lipoma, or better, lipoblastoma.

#### *Uterine Hemorrhage.*

The tendency at present is to use as few therapeutic measures as possible. Occasionally some valuable procedure of limited applicability will be discarded, and zinc chloride is a caustic which is now looked at askance by surgeons. Boldt<sup>7</sup> advocates its use in certain cases of uterine hemorrhage, "particularly when caused by uterine myomas and metro-endometritis or fibrosis uteri." In suitable cases, after malignancy is excluded, intrauterine application once in four weeks will cause permanent amenorrhea. While one application is usually sufficient, more may be necessary.

The technic is simple. A special form of intra-uterine applicator syringe is employed. The medicament is drawn into the syringe,—the applicator is smeared with petrolatum and wrapped with a narrow strap of gauze 1-2 inches wide and 12-24 inches long. The instrument is introduced to the fundus, 4 or 5 drops expelled, the cannula slightly withdrawn and used as a packer in packing in gauze, 4 to 5 drops again expelled and the packing continued until the uterus is full. The gauze should be left in for three days. Care should be exercised to prevent excess of zinc chloride from reaching the cervix where stenosis may occur.

Boldt does not describe exactly the limits of applicability of this procedure, although recommending it highly.

#### *Pelvic Infections.*

Clark and Norris<sup>8</sup> give the results of their study of over five hundred cases in which the postoperative and remote results of surgical intervention in pyogenic infections in the fallopian tubes were considered. These tend to confirm the opinion, now well established, that operation in the acute stage is contraindicated. A course of conservative preparatory treatment decreases the mortality and enhances the chances for securing a good functional restoration of the pelvic organs.

In a large majority the temperature subsides, the pain disappears, the tubal enlargements decrease and may become impalpable. If the pa-

tient is seen in her first attack no operation is advised. If there is a recurrence the same conservative treatment is followed, but when the symptoms have subsided operation is advised. Usually both tubes are removed and the ovaries are conserved.

If the symptoms do not subside under the conservative treatment, vaginal drainage is instituted, either by direct incision into the cul-de-sac or through the guidance of an abdominal incision. It is probably very rarely that a patient dies under the conservative treatment—none in the present series. If the symptoms do increase in severity there is ample time for a simple drainage operation. Drainage through an abdominal incision should be resorted to only if it cannot be avoided.

When the acute attack has subsided it is possible to determine more exactly the extent of the involvement of the tissues, and, if conservative operating is indicated, it can be performed more satisfactorily.

Conservative operative procedures, instituted with a view to restoring a closed fallopian tube, seldom restore fecundity and should, therefore, be undertaken very rarely. Conservation of ovarian tissue should be limited chiefly to women under thirty years of age.

In sexually mature women, if chronic infection of the uterus and adnexa is present, hysterosalpingo-oophorectomy is followed by a lower mortality and greater certainty of restoration to health than are conservative operations.

In the discussion of treatment, Clark and Norris strongly condemn the method suggested by Coffey of walling off gonorrheal infection in the pelvis from the general cavity by means of a "quarantine pack." The use of the pack entails a certain amount of danger and is quite useless because generalized gonococcal peritonitis is very rare.

Cullen<sup>9</sup> describes the surgical methods of dealing with pelvic infections. While he presents little that is new, some of the methods are so firmly based on knowledge of anatomy and pathology, and apparently so little known generally, that they should be emphasized. The placing of a pelvic drain during an abdominal operation sometimes presents serious difficulties to the operator. As a rule it is quite simple,—one cuts through the cul-de-sac into the posterior vaginal vault. To make this incision easy a long curved clamp is introduced into the vagina by an assistant, who makes pressure upward and backward

against the posterior vaginal vault. There is seen from above a small mound in the pelvis, easily incised with knife and scissors. Trouble-some bleeding is most unusual. Through the incision the point of the clamp is passed, grasping the drain which is pulled down as far as necessary. If the opening made by the incision is not sufficiently large, it may be increased in size by stretching with the clamp or by a uterine dilator from above. The use of the long clamp in this way needs careful attention. In one case, reported by Cullen, the instrument had been introduced into the bladder; in another into the rectum—inconvenient, but not especially dangerous, accidents.

Removal of vaginal drains after abdominal operations should not be attempted until the fourth or fifth day, because intestinal coils which may adhere to the gauze will spontaneously loosen about that time. If intestine is adherent, and the gauze should be so placed, if possible, that the two will not come in contact, it may be drawn down into the vagina, with serious results.

If the pelvic infection has resulted in one or more abscesses which may be opened through the vaginal vault, the abscess cavity should never be irrigated. Occasionally infection will be spread to the general cavity in this way, and irrigation is quite unnecessary.

In the case of post-puerperal pelvic infection, the course of the disease is different from that spreading primarily along the mucous membrane, and the foci of infection lie generally in the broad ligament on one or both sides. Access to such foci is more easy and more safe through the abdominal wall and by the extraperitoneal route, making the incision close to Poupart's ligament.

Miller<sup>10</sup> reviews the literature covering ligation or excision of the pelvic veins in the treatment of puerperal pyemia. Nearly two hundred cases are reported; some very briefly, some at length. The tendency of late has been away from this operative procedure which Miller thinks should be used more often.

The excellent results obtained in the treatment of pyemia of otitic origin, by ligation of the jugular vein, prompted operators to apply similar methods in pelvic pyemia. The results have not been as gratifying as in septic jugular thrombophlebitis, yet a careful consideration of the cases reported led Miller to think the outcome better than has been generally supposed.

Before drawing conclusions Miller attempts to answer four questions: (1) Can septic thrombophlebitis be recognized with sufficient accuracy to justify a serious operation? (2) Do the pathologic conditions revealed at operation and autopsy justify intervention? (3) What are the indications for operation? (4) Has the mortality been reduced by operation?

It would seem that septic thrombophlebitis has a fairly characteristic symptomatology and in a given case, presenting high temperature with pronounced remission, the absence of pelvic exudates and peritonitis, with the uterus empty and correspondingly involuted, a diagnosis should not be difficult. Some writers emphasize the importance of being able to feel the thrombosed veins.

Whether pathologic findings do or do not justify surgical interference depends on whether operative or autopsy material is considered. The latter gives terminal conditions and is less favorable. But the conditions at operation show a marked tendency for the thrombosis to limit itself to one vein, usually the spermatic.

The indications for operation may be summed up briefly: As soon as the diagnosis is fairly clear, if there are no evidences of peritonitis, broad ligament abscess, multiple, metastatic abscesses, acute endocarditis, or pneumonia. Almost all of the cases showing signs of peritonitis died and few recovered that presented pulmonary lesions.

One hundred and ninety-seven cases are included in this series. Fifteen were treated by the extra-peritoneal, and 182 by the transperitoneal operation. The gross mortality (not including the vena-cava series) was 51.6 per cent. The corrected mortality (excluding unsuitable cases) was found to be 33.9 per cent. The average mortality of puerperal pyemia is generally accepted as between 60 and 70 per cent.

#### *Pituitary Gland.*

Goetsch<sup>11</sup> discusses the relation of the pituitary gland to the female generative organs, from the experimental and clinical aspects. He points out the danger, in discussions of the physiology and pathology of these organs, of engaging in pointless theorization and suggestions unless there is a firm basis of well-controlled experimental and clinical observations upon which to stand. He summarizes (not too briefly) the results which have hitherto been obtained. One paragraph on the clinical side may be quoted:



"As a result of the facts learned from the experimental feeding of pituitary extracts, particularly of the anterior lobe, we should feel encouraged in our efforts to benefit clinical states dependent upon under-function of this gland in the human. Thus, for example, a number of clinical cases showing, among other symptoms, characteristic sexual disturbances (irregular menstruation, amenorrhea, sterility), dependent on primary pituitary disease, have been so greatly benefited that there have been a return of menstruation and libido, even when these had been absent for a considerable period. It is probable that many clinical conditions showing genital aplasia, adiposity and under-development, and dependent upon changes in one or more of the ductless glands, other than the pituitary, would be benefited by the feeding of pituitary extract in addition to the extract of the gland which is primarily involved. On the other hand, the feeding of extracts, such as thyroid and adrenal, combined with pituitary in clinical cases of pituitary disease in which symptoms referable to these glands are present, is advisable.

Some alleged effects of pituitrin on the intestinal tract have been very striking, yet other investigation failed to reproduce effects under apparently similar conditions. It may be concluded from the literature that there is a wide variability in the physiological activity of various commercial pituitary extracts, and it has been suggested that there is in the posterior lobe of the gland some substance which has an action on the isolated intestinal loop of animals, resembling that of adrenalin, a substance which may be other than that which raises the blood pressure and causes diuresis.

Pancoast and Hopkins" studied the effect of pituitrin in a small series of patients from the medical wards, in whom there were no marked gastrointestinal symptoms, except the occurrence of constipation in a few. The patients were controlled and studied with great care, using the bismuth or barium meal and the x-ray to detect change in motility. This method is an accurate and valuable means of studying certain phases of drug action, and the findings are as follows:

In the stomach there was usually a primary depressing influence upon peristalsis or motility or both, followed by an increase in both. The same effect followed repeated doses. The pylorus

was influenced very little, and when any effect was noted it was variable.

In the small intestine motility was, as a rule, either not affected or was slightly delayed.

In the large bowel the drug produced little or no appreciable effect on motility in the class of patients examined.

#### *Ovary, Uterus and Mammary Gland.*

Loeb" summarizes our present knowledge of the relation of the ovary to the uterus and mammary gland from the experimental point of view as follows:

"1. The ovary is a complex gland, of which the most important constituents are follicles in various stages of growth and atresia, and corpora lutea. In addition, we find in some species interstitial gland and sometimes embryonic structures developing parthenogenetically from eggs.

"2. Cyclical changes occur both in the ovary and secondarily in the uterus and mammary gland.

"3. The primary cyclical changes in the ovary are in sequence: follicle ripening, ovulation, corpus luteum formation. In some species ovulation is accompanied by degeneration of all but the smallest follicles.

"4. An elaborate self-regulating mechanism controls ovulation. Normally, the corpus luteum inhibits ovulation. During pregnancy the life of the corpus luteum is prolonged. Experimentally ovulation can be influenced at will, accelerated by excising all corpora lutea, or retarded by producing artificial deciduomata. The retarding action of the corpus luteum is chemical, not mechanical.

"5. The corpus luteum has a sensitizing action upon the uterus. This action can be analyzed by experimental methods. If the uterus is incised or mechanically stimulated at the time during which the corpus luteum is elaborating this growth substance, maternal placenta (deciduoma) is formed. The mechanical stimuli, therefore, assume in this respect the function which the ovum exerts under normal conditions. The form of growth response of each species is characteristic. The localization of sensitization varies in different species, being limited to the uterus in rabbits and guinea pigs, but distributed more widely in the human female. No specificity exists in the sensitizing substance given off

by the corpus luteum as far as different individuals of the same species are concerned. The life period of experimental deciduomata is short, except in pregnancy, during which their persistence is prolonged.

"6. Corresponding to and dependent upon the cyclical ovarian changes, uterine cyclical changes occur. The cycle consists of heat, growth associated with glandular activity, regression and interval. Heat probably is due to maturation of the follicles and dependent upon the absence of the corpora lutea; growth activity is the result of corpus luteum secretion; regression marks the cessation of corpus luteum secretion, which is followed in the interval by a condition of rest. Pregnancy causing a persistence of the corpus luteum is characterized by an accentuation, but not a prolongation, of the active phase, and an inhibition of the uterine cyclical changes throughout gestation.

"7. While it is possible to produce, experimentally, during pregnancy a new ovarian cycle, through excision of the corpora lutea, such a new ovarian cycle is not followed by a new uterine cycle. During pregnancy a mechanism is at work preventing the uterine mucosa from responding to the stimuli given off by various ovarian structures.

"8. It follows from 4 and 5 and 6 that the corpus luteum subserves at least two functions, inhibiting ovulation and producing a substance which causes growth in the uterus.

"9. The ovary shows other non-cyclical functions. It has a trophic influence on the genitals and either primarily or secondarily determines the development of the secondary sexual characters.

"10. The ovary, likewise, controls the development of the mammary gland. It exerts a trophic influence on this organ and determines its normal cycle. During heat and subsequent to ovulation proliferative changes occur; these cease while the corpus luteum develops and functions.

"11. The incidence of breast cancer in mice is greatly reduced by castration."

(To be concluded next week.)

#### RECENT DEATH.

HENRY JESSE KENYON, M.D., a Fellow of The Massachusetts Medical Society and a graduate of the College of Physicians of New York City, died at his home in Worcester, April 5, 1918, aged 66 years.

#### Society Report.

MEETING OF GENERAL MEDICAL BOARD OF COUNCIL OF NATIONAL DEFENSE, HELD IN CONNECTION WITH DEDICATION OF WARDEN McLEAN AUDITORIUM AT CAMP GREENLEAF, CHICKAMAUGA PARK, GA.

DEDICATION of the Warden McLean Auditorium at Camp Greenleaf, the military medical school at Camp Chickamauga, Ga., on March 11th was made notable not only because of the presence of the Surgeon-General of the Army and members of his staff, as well as many distinguished medical men from military and civil life, but also because of the regular meeting there March 10th of the General Medical Board of the Council of National Defense, usually held in Washington. About 1,000 doctors, who, as Medical Reserve Officers, are taking the three months' course, accepted the invitation to attend, extended by Dr. Franklin Martin, member of the Advisory Commission of the Council and chairman of the Board.

These members of the General Medical Board attended: Dr. Franklin Martin, chairman; Dr. William F. Snow, secretary; Surgeon-General William C. Gorgas, Dr. Victor C. Vaughan, Dr. William H. Welch, Dr. John Young Brown, Dr. John G. Clark, Dr. Thomas S. Cullen, Dr. Edward P. Davis, Dr. William D. Haggard, Dr. Jabez Jackson, Dr. Edward Martin, Dr. Charles H. Mayo, Dr. Stuart McGuire, Dr. John D. McLean, Dr. Hubert A. Royster.

Introduced by Dr. Martin, Surgeon-General Gorgas said he knew of no more important work than the activities being developed at Camp Greenleaf; that the necessity of military medical training is obvious; also that on a visit to England five years ago he learned that the great developments in the English system had been forced by the necessities arising during the Boer War; so, he said, the United States military medical service is being developed by the exigencies now confronting us and would continue after the war. He said he gained from the British Service ideas of value for his administration.

Dr. William H. Welch read a statement giving illuminating figures as to the status in the Army and Navy. Men enrolled in the Medical Officers' Reserve Corps, and recommended to the Adjutant-General's office, totaled 21,824, of whom

17,313 have accepted their commissions. Of 5,378 recommended in the Dental Reserve Corps, 5,086 have accepted. Of 1,067 recommended in the Sanitary Corps, 865 have accepted. Of 152 recommended in the Ambulance Service, 138 have accepted. There are 844 officers in the Naval Medical Corps and 103 in the Naval Dental Corps. There are 827 medical and 199 dental officers enrolled in the Naval Reserve Force. There are available in the Naval Medical Reserve Corps, retired officers, acting assistant surgeons and national naval volunteers, naval militia and coast guard, 284 men. Total officers available for active service are 2,257. There are 207 chief pharmacists and pharmacists, 7,000 hospital corpsmen in the regular service and 1,000 in the reserve, making a total available for active service in these branches of 8,207. In February there was an exceedingly satisfactory decline in the admission rates for communicable diseases, as well as for all causes. In the force afloat, the situation as to pneumonia and cerebro-spinal fever is very satisfactory. Scarlet fever has been slightly more prevalent than usual but in no sense epidemic; a very satisfactory decrease in measles; mumps continues as heretofore. In the fleet there were 1 case of cerebro-spinal fever, 20 of German measles, 35 of measles, 167 of mumps, 26 of scarlet fever, 43 of pneumonia, lobar and broncho. Health conditions afloat are highly satisfactory.

Dr. Martin, in expressing the regrets of Surgeon-General Braisted, of the Navy, who was unable to be present, said: "I was in Admiral Braisted's office one morning and found him getting reports by telephone from his various naval stations. From 8.30 to 10.30 o'clock every morning he receives these reports, and gives instructions, thus keeping in constant touch."

Before introducing Passed Assistant Surgeon C. P. Knight of the United States Public Health Service, who reported in the absence of Surgeon-General Blue, Dr. Martin read the following telegram received from General Blue:

"Washington, D. C., March 9, 1918.

"Dr. Franklin Martin,  
"Chattanooga, Tenn.

"Request that you give publicity to the fact that Public Health Service is greatly in need of the services of competent sanitarians, particularly medical officers, sanitary engineers and scientific assistants. Salaries vary from \$1,800 to \$2,500 per annum. Applicants should ad-

dress Surgeon-General, United States Public Health Service, Washington, D. C., stating in full experience and training which they have had. Blue."

Surgeon Knight's report summarized the good work done under his direction since September, 1917, in the five-mile zone around Chickamauga Park, a zone having a 100,000 population, including 60,000 in Chattanooga. Concrete results included: Inspection of 375 restaurants, of which 148 complied with the regulations; 39 barber shops, of which 29 have been furnished cards indicating full compliance; anti-fly campaign; examination of 2,500 employees of restaurants, barber shops and dairies, 3% being dismissed because of having communicable disease; complete survey of 3,000 rural homes, accompanied by educational talks resulting in orders for installation of sanitary privies; complete survey of private water supplies; inspection of all industrial plants, with corrections under way; submission of fuller reports by physicians, and all reported cases being tabulated and investigated; inspection of all dairies; pasteurization of about 30% of milk supply; eating establishments compelled to serve pasteurized milk; thorough medical inspection of Chattanooga schools and intensive rural school surveys recommended; providing Chattanooga with full-time physician and 6 Public Health Nurses by the U.S.P.H.S.; establishment of unit for treatment of venereal diseases; conference with Attorney-General of Tennessee which led to Governor Rye's order to Chattanooga Board of Health to proclaim venereal diseases a menace to the civil and military population, and directing it to make regulations for control in coöperation with the Provost Marshal, and steps under way to make this a state-wide campaign; and introduction and passage of ordinances in adjacent counties providing sanitary sewage disposal. Lieutenant-Commander Knight has been made a deputy health officer by county and city authorities.

Dr. William D. Haggard, of Vanderbilt University, read a statement for the Red Cross which showed that there are 20 base hospitals on active duty abroad and 14 others mobilized of 19 certified as ready for immediate service. Distribution of sweaters to soldiers and sailors and all Red Cross sources totals at least 1,250,000. Authority for Red Cross work within camps has been conferred by an official order

signed by the Secretary of War. Contracts for convalescent houses in 4 camps have been let and others will soon be signed. Twenty-seven sanitary units coöperated with federal and state authorities, in February, in 17 different states. The 4 laboratory cars, "Reed," "Pasteur," "Lister" and "Metchnikoff," have been turned over to the Army Medical Corps. Venereal clinics are now in operation in 17 camp cities.

Major William F. Snow, reviewing the work of the Committee for Civilian Coöperation in Combating Venereal Diseases, said that military medical advisers have been provided for state Boards of Health, municipal clinics are being placed, and an excellent moving picture film, "Fit to Fight," has been prepared to be shown at the camps as an educational measure.

Major Edward Martin, reporting for the Committee on States Activities, told of coöperation with the state societies in various ways. Reporting for the Editorial Committee, he mentioned the 6 manuals on medical military practice, all of which have been approved by the Surgeon-General's Office.

For the Committee on Surgery, Dr. Charles H. Mayo told how data on 21,000 physicians had been gathered and placed on cards convenient for the ready selection of individuals and groups suited for any given task, a duplicate set of which cards has been prepared for the use of the Surgeon-General's office in France. Dr. Mayo emphasized the need of reconstructing wounded men, not only for field service, but also for labor after the war, inasmuch as the usual tide of immigration has ceased. Citing the many Government activities in which medicine enters, he said these relations, he believed, could be coördinated in no way except by having a medical man as a Cabinet Officer. He closed with this plea for recognition of medical military men:

"Medical men must have adequate rank. They are entitled to it. For it is not as if they were at work in the military service, doing work to which they are new and unaccustomed. They are working in the line to which they have given their lives. They can't do their best unless they have adequate recognition and rank."

In the absence of Miss M. Adelaide Nutting, chairman, Miss Ella Phillips Crandall, secretary, reported for the Committee on Nursing. The total nurses enrolled to date are 18,344, of whom 10,000 have enrolled with the Red Cross

since April 6, 1917. The Red Cross had supplied the Army with 6,220 up to March 1, and 1,000 to the Navy and Public Health Service. As insufficiency of nurses in December was due in some camps to lack of housing accommodations, and in others to the fact that a larger quota had not been called for, the Committee recommended to the Surgeon-Generals of the Army and Navy that suitable accommodations be provided in adjacent towns where necessary; that there be a quota of not less than one nurse to 6 acutely ill men; that a reserve of 25 above the prescribed quota be stationed at each hospital; that Miss Anne W. Goodrich be assigned to inspect military and naval hospitals, and that superintendents of three-year training schools graduate the 1918 classes early. These recommendations received unanimous endorsement of the Executive Committee of the General Medical Board, the Surgeon-Generals and the Secretary of War, since which time all demands for nurses have been met. The Committee is continuing its campaign to attract young women into training schools and is coöperating in the courses to be given at Vassar College this summer for young women who shall have registered for entrance to a graduate school of nursing in October, these women then being eligible for graduation in two years instead of three. Appeals to training schools and professional registries, together with the Red Cross campaign for nurse enrollment, will, the Committee believes, readily provide the 5,000 additional nurses who, it is expected, will be required by June 1; and that the total of 37,500 graduates will be furnished as needed. The committee is seeking relative rank as recognition for Army and Navy nurses, they having all been provided for in the War Risk Insurance Law through the Committee's efforts.

Miss Crandall, also reporting for the Subcommittee on Public Health Nursing of the Committee on Hygiene and Sanitation, told of an experiment in two states in coöperation with the Food Administration whereby Public Health Nurses are to have special instruction in food economics.

Dr. Jabez Jackson, of Christian Church Hospital, Kansas City, Mo., spoke of the need of nurses to take the place of experienced nurses who have gone into military service, saying that 12 out of 15 nurses had gone from one hospital in his city. He advocated special attention to nurse apprenticeship in hospitals.

Introduced as President-Elect of the American Medical Association, Dr. Arthur Dean Bevan expressed the confident belief that, whether the war lasts three years or five years and requires 3,000,000 men or 5,000,000 men, the medical profession will continue to stand by "until the job is finished." He said: "It is the one business of the American Medical Association to educate the profession to realize the extent of the work before it. At our great meeting in June I should like to have back with us such men as Osler and DePage to tell us at first hand something of their work and the need for such work as theirs on the other side."

Major John D. McLean told of the progress of the plans for the Volunteer Medical Service Corps, reading the conditions of membership. This body will be open to reputable physicians ineligible to the Medical Officers' Reserve Corps because they are over the age of 55, on account of physical disability, or because of necessity for home service, or other good reason. "An organization of the doctors at home to do a something when there is a something to do" was the way Dr. McLean summarized the function of this new organization which will act when called upon by the Surgeon-Generals of Army, Navy or Public Health Service. He emphasized the fact that this organization "will not protect slackers at home." Dr. McLean exhibited an attractive design proposed for insignia.

Lieutenant-Colonel Victor C. Vaughan, reporting for the Committee on Legislation, told of the request of the Army medical officers for higher rank and greater authority, and of the Owen-Dyer Bill (S. 3748 and H.R. 9563) now pending in Congress. He cited instances which he said indicated need for greater rank, and then read the following letter from President Wilson to Dr. Franklin Martin, endorsing the bill:

"5 March, 1918.

"My dear Dr. Martin:

"I read very carefully your memorandum of February twenty-seventh about the rank accorded members of the Medical Corps of the Army and have taken pleasure in writing letters to the chairmen of the Military Committees of the House and Senate, expressing the hope that the bill and resolution may be passed.

"Cordially and sincerely yours,

"Woodrow Wilson."

"Dr. Franklin Martin

"Advisory Commission

"Council of National Defense."

The dedication exercises on Monday morning, March 11, were attended by a throng which

filled the auditorium to overflowing. On the stage was a notable group of army medical officers, with a sprinkling of civilian doctors of national and international fame. Lieutenant-Colonel Roger Brooke presided. Those on the stage included: Surgeon-General William C. Gorgas, Brigadier-General J. B. Erwin, in command of Camp Forrest; Colonel Henry Page, Dr. Franklin Martin, Member Advisory Commission, Council of National Defense, and chairman General Medical Board; Colonel E. L. Munson, Lieutenant-Colonel V. C. Vaughan, Lieutenant-Colonel William H. Welch, Johns Hopkins University Medical School; Major Charles H. Mayo, president American Medical Association; Dr. Arthur Dean Bevan, president-elect American Medical Association; Dr. Edward P. Davis, Philadelphia; Major John D. McLean, Major Stuart McGuire, Major George E. de Schweinitz, and many others.

After music by the Camp Greenleaf orchestra and invocation by Bishop Thomas F. Gailor, Episcopal Bishop of Tennessee, Dr. John G. Clark, of Philadelphia, made the speech of formal presentation of the \$10,000 auditorium on behalf of Mrs. Wm. McLean, whose son, Warden McLean, while in the officers' training camp at Fort Oglethorpe, was accidentally killed. Colonel Henry Page, who, since his graduation from the University of Pennsylvania School of Medicine in 1894, has been continuously in the regular army and whose efficient, untiring efforts have transformed the site which in 1898 was the dumping ground for the Chickamauga Camp, made the speech of acceptance. He said it is his ambition to have here a great postgraduate training camp, and that he hopes to see the temporary buildings replaced by permanent structures.

He was followed by General Gorgas, who argued convincingly for military training for medical officers. He said that notwithstanding handicaps, the present American Army has established a sanitary world's record, for it has cared for 1,000,000 men and the death rate is 10 men per thousand, whereas Japan, during the Russo-Japanese War, was deemed to have accomplished a marvel when she kept her death rate down to 20 per thousand. "This is but the beginning of Camp Greenleaf," he said. "This probably will be the focus of our medical activities." He said that Camp Greenleaf, located in the geographical center of 450,000 troops in training, seems the logical location for the one



great medical training ground, with accommodations there possibly for 40,000 men, trebling its present capacity. He expressed a wish that the Council of National Defense might interest itself in such a project, and he said: "From past experiences I am sure of their interest."

Brigadier-General J. B. Erwin, the Commandant at Camp Forrest, adjacent to Chattanooga, in a happy speech indicative of the present cordial coöperation of the line officer with the medical branch of the service, evoked enthusiastic applause when he advocated a detention cantonment for the "laundering" of recruits before they are allowed to mingle with the men in camp—thus decreasing the chances of mumps and measles, diseases which, he said, are certain to break out wherever bodies of men are gathered in camp or barracks.

Lieutenant-Colonel Victor C. Vaughan recalled a visit to Berlin in 1907 and a talk with Wassermann, the German medical authority, in which the latter expressed a fear that the 50,000 soldiers quartered in Berlin and the other like units in other cities indicated that "some day" Germany's military leaders would plunge that country in war which might mean the dismemberment of the empire. Dr. Vaughan expressed the hope that some day he might walk through the streets of Berlin and see flying from public buildings the flag, not of France, nor of Britain, nor of the United States, but of the German republic.

Dr. Vaughan, reverting to conditions at Chickamauga as he found them in 1898, when there was not a single microscope nor test tube in the camp, contrasted those conditions with the fact that a medical camp has here been established. He contrasted the attitude of the line officer of those days with the work-together spirit of today.

Dr. Edward P. Davis, of Philadelphia, praised the spirit of the doctors in training, and reminded the audience that physicians really entered the profession of war when they became medical students. "You are soldiers by inheritance and training," he said.

A review in the afternoon of the 12,000 men in the various medical and sanitary units, with a field hospital demonstration, had a dramatic setting. From the knoll overlooking the parade ground from the east several score interned Germans, ranged behind the wire of their stockade, viewed the spectacle, while on the western side of the field was the immense crowd of civilian

visitors who came by automobile and trolley. Well in their rear, towering high above, rose historic Lookout Mountain.

The Warden McLean auditorium building is situated in the center of Camp Greenleaf. Besides the main assembly hall there are several smaller rooms, including orthopedic museum, library and reference room, lecture rooms, study rooms and office. Since the opening of the camp 4,000 officers and 20,000 enlisted men have been trained and sent to duty abroad or to instruct at other camps.

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### Book Reviews.

*The Law of the Heart.* By ERNEST H. STARLING, M.D., Sc.D. (Cambridge and Dublin), F.R.C.P., F.R.S. London: Longmans, Green and Company. 1918.

This pamphlet is a monograph representing the Linaere lecture given by the author at the University of Cambridge, England, in 1915. It is a physiologic study, based on the researches of Blix, into the molecular nature of heart action, and is illustrated with eight diagrams. It is a valuable brief summary of the knowledge of cardiac physiology, and a useful contribution to the substance of this knowledge. The author determines experimentally that within physiological limits, the larger the volume of the heart the greater are the energy of its contractions and the amount of chemical change at each contraction. In the heart, as in muscular tissues generally, the energy of contraction, however, measured, is a function of the length of the muscle fiber; and any increase in the extent of active surface increases the energy of change. In the healthy heart, the demand for increased action temporarily dilates the heart, thereby elongating its muscle fibers, and enabling each fiber to concentrate a larger number of active molecules on each unit of active surface than it could previously. This automatically improves the tone of the muscle, and thereby enables the heart gradually to return to its normal volume, even though still doing increased work. In the fatigued, diseased, or failing heart, however, the concentration of active molecules per surface unit becomes less and less, so that this surface must be continually increased by cardiac dilatation. If this process goes on sufficiently long, the dilatation may pass the optimum length of muscle fiber, and the heart must then contract at an increasing mechanical disadvantage, which leads to ultimate failure.

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## THE STATUS OF TONSIL OPERATIONS.

In spite of the many modern advances in medicine very little, if anything, is yet known concerning the functions of the tonsil. Being a ductless gland, it has been thought to be part of the endocrine system, but no connection therewith has been found, and, indeed, removal of these glands seems to have no effect on the organism. There are those who believe the glands to be vestigial in character, now having no function at all, and best removed from the body whether giving symptoms or not. A plausible, though unconfirmed, hypothesis is that these glands act as mechanical barriers to the passage of irritating or infective agents. When it is remembered how often these glands are the seat of numerous infections, this hypothesis receives added weight. The tonsils are considered to be the portals of entry for many specific infections, but particularly of the infections causing rheumatism and endocardial conditions.

Tonsil operations have been carried out for a long time, but heretofore they have been very lightly undertaken. Practically no line was drawn between cases that needed removal and those that did not. Yet it goes without saying that unless a tonsil is so large that it obstructs the passages or is the frequent seat of inflammations, surgical interference is not justified, at least until more is known concerning the function of this gland. Moreover, tonsil operations are no longer undertaken by the unskilled. These operations have had a remarkable metamorphosis from minor to major surgical operations. This has in a measure been the natural outgrowth from the reports of increasing fatalities from these supposedly minor operations. The clinic, or even the home, is no longer considered a fit place for this operation any more than for other surgical operations of admittedly major significance. The operation must be surrounded by all the safeguards that a hospital can afford if bad results would be reduced to a minimum. Besides, American surgeons are in favor of doing all these operations under anesthesia. Local anesthesia, however, should be consistently removed from the list of available anesthetics for tonsil operations because there is no means of knowing the amount and the rapidity of absorption of the cocaine, and because of the danger of subsequent severe hemorrhage. Cocaine is a particularly treacherous drug, having caused many fatalities, and without any warnings of danger. Neither is chloroform favored as a general anesthetic in these operations, also because it is very treacherous in its action, and there does not seem to be sufficient justification for subjecting a patient to this special danger for an operation not of vital necessity. It seems that the ideal anesthetic for tonsil operations is ether, preceded by nitrous oxid.

The mere cutting off of the redundant tissue from the tonsil—tonsillotomy—is no longer in favor. It is considered very poor surgery. Recurrences are usual. This procedure merely exposes a large surface to infection, and for a time at least, until healing, causes an increase of the very conditions that the operation is intended to obviate. If this operation is decided upon as necessary, then the only procedure of choice is complete removal, enucleation—tonsillectomy. The gland should be dissected out, preferably with a blunt instrument, and hemorrhage controlled as in any surgical operation. Styptic

drugs or like measures are neither necessary nor advisable. Carried out from this standpoint, tonsil operations need cause little fear of untoward results.

#### SCHOOL INSPECTION AND SANITATION IN EXTRA-CANTONMENT ZONES.

THE Public Health Report of the United States Public Health Service for the week of March 8, contains some very interesting information regarding school inspection and sanitation in extra-cantonment zones. Medical inspection of school children is one of the activities undertaken by the Service to prevent the carrying of communicable diseases to the troops. Such inspection has already been commenced in practically all of the zones surrounding the Army cantonments.

An officer of the Service is detailed to give his full time to the work, and has an office and the assistance of school nurses or other help. The expenses, as a rule, are met jointly by the Red Cross, the local health authorities, and the Public Health Service. The plan is for the Service officer and nurse, through coöperation with the teachers, to keep a close watch on each school for the early detection of contagious diseases. The parents are then notified, the quarantine rules are enforced, vaccination is practised where it fits the case, and all possible is done to prevent the disease from reaching the cantonment. The protection of the troops is the great aim, but at the same time the other benefits to be derived from school inspection are not to be overlooked. In all communities where school inspection has been adequately carried out, the result has been a remarkable reduction in the incidence of contagious diseases in the general population. Children are to be examined, not only for contagious diseases, but at least once a year for physical defects. These defects tend to lower individual resistance and increase the susceptibility of a child to contagious disease. They also retard intellectual development and prepare the way for degenerative diseases in later life. When these defects are found, the parents are informed and urged to have them corrected. Clinics are established wherever possible, in order to give the necessary operative treatment to needy children.

The United States Public Health Service has, as a part of its war duties, taken charge of the sanitation of many of the extra-cantonment zones. That district of Virginia between the York and James Rivers is of especial importance, as there will be gathered for training and embarkation the pick of all branches of the Army. Langley Field and Morrison Aviation Field, as well as Fort Monroe with the Artillery School, are in this district. Two large embarkation camps—Camp Stuart and Camp Hill—will contain a military population already trained, whose health is of vital importance to the country. In addition, the Newport News Shipbuilding and Drydock Company employs over 10,000 workmen engaged largely in government work. In this space—about 100 square miles—the population has increased more than 50% since the outbreak of the war. Local health authorities were utterly inadequate to care for so many people, so the work was given over to the Service, which coöperated with established organizations and increased all departments to war-time needs. The Red Cross furnished much assistance, creating a sanitary unit with an appropriation of \$21,000. These funds made it possible to undertake measures against malaria-bearing mosquitoes, involving an expenditure of several thousand dollars, which could not reasonably have been obtained from the Federal Government, and have supplied promptly public health nurses, sanitary inspectors, and have made it possible to extend the work into the country by furnishing automobiles.

The work in this district covered communicable diseases and malaria, the proper disposal of excreta, the safeguarding of the supply of milk and water, and the inspection of schools. The sanitary control of establishments selling food and drink was undertaken in connection with the Army. The matters of garbage disposal, abatement of nuisances, the inspection of stores, and the like were left entirely with the local health authorities.

#### THE RECLAMATION OF THE DISABLED.

It is no longer considered sufficient for the civil or the military surgeon to treat injuries solely with the view of rapid healing—what

was previously called a good surgical result. Unless the injured member is put in position by the surgeon for the greatest degree of usefulness after healing, the surgery has been a failure. The progressive surgeon must have an eye not only to healing, but he must plan and fashion his operation in keeping with subsequent possibilities for usefulness of an injured member. From the standpoint of the military surgeon, the question is even a broader one. Not only the rehabilitation of an injured member but the reclamation of the injured person must be the aim of the surgeon, his co-workers and the public. This point is well understood in Europe, and the surgeon is even interested in the possibilities of training the disabled in new and useful occupations. His operative plans are much modified by the results being obtained with mechanical appliances and the subsequent training. English surgeons have devoted much time and thought to the construction of mechanical appliances and in coöperation in the training of the disabled soldier. However, in training the disabled individual for new occupations the conditions in the labor market of a particular occupation must be borne in mind, else there will be overcrowding in occupations where the disabled workers would have difficulty to hold their own in competition. It is this very possibility of overcrowding and competition which the disabled individual can little afford to stand that makes it necessary to train the disabled along special and perhaps even undeveloped occupational lines. The disabled soldier must not be allowed to depend for his future occupation upon the bounty of a public that makes room for him, but he must be made a skilled worker and able to command his place in the industrial or professional fields. It is said that Nature compensates an individual for the loss of a member or a faculty by enlarging others of the remaining ones. However that may be, this compensation may be explained by saying that the disabled individual's greater need of close application to work, his exclusion from other fields of activity, and even amusement, leaves him not only with more will to specialize, but also with more opportunity, for he is distracted by fewer extrinsic demands than the normal person. Much of this specialization in occupation has been carried out with the blind and with the deaf mute very successfully, and there is little reason why it cannot be applied elsewhere, but particularly in

the case of the disabled soldier. Inquiry into the natural aptitude of the remaining individual members, senses or faculties can now be carried out by appropriate psychological apparatus. When determined, the part of the organism that is found to have the most psychology aptitude is further trained and then harnessed to some suitable and useful occupation. Without this sort of inquiry, the overcrowding of some industrial fields will work harm to the community, and many evidences of natural ability will be overlooked. This opportunity to train special workers from among the individuals who would otherwise be a burden to themselves and to society, may yet prove to be one of the good things arising from evil, besides solving a very serious problem—what to do with the great army of disabled soldiers, and what the best methods of reclamation are.

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#### ATTENDANCE AT MEDICAL MEETINGS.

It has been a cause for chagrin to the officers of Suffolk District Medical Society that the series of war talks given in connection with the Boston Medical Library have been so poorly attended. One would think that the timeliness of the subjects and the character of the speakers would draw more hearers, in spite of the extra demands for doctors' services made by the community.

In February, Colonel Derele, representative of the French Medical Service in this country, and Major Archibald, a Canadian surgeon who had seen much service at the front, gave excellent addresses. The audience, though small, made up in enthusiasm what it lacked in numbers. On March 20. Dr. James Alexander Miller of the Rockefeller Commission which was sent to France to study the problem of tuberculosis among the civil population, presented a marvellously sympathetic and instructive picture of social conditions in France. It was a liberal education to be given such a point of view of the great war as was presented to his hearers. Yet the audience, scattered strategically throughout the hall, filled a scant half of the room.

A small audience suggests discourtesy to these and other speakers, many of whom travel long distances to talk to us, and will in time make it difficult for the officers of the Society to secure good men.

The society will be given an opportunity to show its interest in problems of public health on April 24, when Dr. Eugene Kelley, the newly appointed State Commissioner of Health, will present the State's plan for fighting venereal disease. The tremendous importance of this subject and the opportunity which will be presented for the Society to demonstrate its interest in the achievements of the Department of Health should combine to secure a good attendance. Let the medical profession of Boston prove that it is interested in questions of wider range as well as in those merely of therapeutics or of surgical technic.

The meeting will be open to the medical public.

#### MEDICAL NOTES.

ANNUAL REPORT OF THE JORDAN MEMORIAL SANATORIUM.—The fifth annual report of the Jordan Memorial Sanatorium for Tuberculosis, River Glade, New Brunswick, was presented in October, 1917. It has been decided during the past year to care for returned tuberculous soldiers from the province of New Brunswick at the Sanatorium. The institution is in splendid running order, has a most efficient staff and aims to teach its patients not only how to get well, but how to remain well. It has established clinics in several of the large cities of New Brunswick, where advice is given to those with tuberculosis symptoms. A goodly number of the patients who come to these clinics are children. It is essential to get at the children and to start them on the right road before it is too late, for they are the citizens of the future. In order to maintain a strong and healthy community the children must be prevented from becoming infected, and taught how to conduct themselves in order to remain well and healthy. Results of treatment of tuberculosis at the institution for the past year have been good. Fifty per cent. of those discharged were discharged either apparently arrested or apparently quiescent. The average length of stay of these cases was longer, the average gains in weight greater, the number of those who gained in weight larger, than that of the previous year.

It is expected that before summer the Sanatorium will have a ward ready for the care of returned tuberculous soldiers of the Province.

Beds are being prepared for fifty-six such patients.

B. S. IN PUBLIC HEALTH.—A two-year course in public health, leading to the degree of bachelor of science in public health, is being offered by Simmons College. The programme is designed to give, in two years, the technical training required in a modern public health laboratory. It may be substituted for the third and fourth years of the regular household economics and general science courses, or it may be taken independently by students from other colleges who have satisfactorily completed two full years in an approved college, with one year of work in physics and biology, and approved courses in general and organic chemistry. The course is planned to satisfy the demand for administrative and technical workers, as illustrated by a letter written by Dr. Richard M. Pearce, chairman of the division of medicine and related sciences of the Council of National Defense, saying that there was a great need for trained technicians to work under military control.

#### WAR NOTES.

ARMY DEATHS INCREASE.—Report from Washington, on March 29, states that although health conditions in general among the troops training in this country are described in this week's report of the division of Field Sanitation as "very good," deaths among the soldiers increased from 180 the week before to 223. Pneumonia increased in the National Army and Regulars, but in the National Guard all epidemic diseases are declining.

"Deaths in the Regular Army last week were 86 as against 71 the week before; in the National Guard 20 as against 28; and in the National Army 117 as against 81. Seventy-three of the deaths in the National Army, and seven of those in the National Guard, were caused by pneumonia.

Only 76 new cases of pneumonia were reported from the National Guard camps, but in the National Army camp 287 new cases of this disease were reported as against 255 the week before. Mumps and influenza prevail in many National Army camps, and some measles and meningitis are reported.

In the National Guard camps the sick and death rates are described as remarkably low, while in the Regulars there are fewer cases of



measles, scarlet fever and meningitis. Pneumonia shows an increase among the Regulars, particularly in the aviation section and the Southern Department."

**ARMY DEATHS NUMBER 237.**—The War Department announces that the health of the army in the United States continued good for the week of April 4, although bronchitis and influenza, complicated with pneumonia, in many northern camps, increased the noneffective and death rates slightly over the preceding week. The total number of deaths reported was 237, of which 90 were among the regulars, 29 in the National Guard, and 118 in the National Army.

**MEDICAL UNITS OF WOMEN TO BE SENT TO FRANCE.**—Medical units composed of women will be sent immediately to that portion of France devastated by the present German drive—according to a statement issued by the American Women's Hospitals, which is conducting a campaign to raise \$200,000 for the equipment and staff of a chain of hospitals. New York alone has already subscribed \$23,258 toward this amount.

**BRITISH BIRTH RATE EXCEEDED DEATH RATE IN 1916.**—Notwithstanding the war's carnage the number of births in 1916 exceeded by 277,303 the number of deaths, according to the Registrar General's report just made public. The reduction in the number of births amounted to only 12%. There was an unprecedentedly low marriage rate in 1916 as compared with an abnormally high one in 1915, the decrease being attributed to the fact that compulsion for military service was applied to married men in 1916.

**COMMISSIONS FOR NEW ENGLAND MEDICAL MEN.**—It was announced from the Surgeon General's office on March 28 that the following New England men have accepted commissions in the army medical corps:

Major—Gray, George H., Lynn, Mass.

Captains—Ferguson, J. B., Providence, R. I.; Hathaway, J. G., New Bedford, Mass; Hopkins, B. H., Ayer, Mass; Torbert, J. R., Boston, Mass.

First Lieutenants—Budington, H. F., Springfield, Mass; La Liberté, E. J., Fall River, Mass; Morris, F. M., Fall River, Mass; Lucas, J. D., Boston, Mass.; McIntire, W. A., Worcester,

Mass.; Whalen, E. J., Hartford, Conn.; Sawyer, Edward J., Gardner, Mass.

**AWARD OF THE DISTINGUISHED SERVICE CROSS.**—Report from Army Headquarters in France states that the distinguished service cross has been awarded to Lieutenant J. P. Rosenwald of the medical corps attached to the artillery. Lieutenant Rosenwald, while attached to an artillery regiment, "twice entered a battery position under heavy fire in order properly to are for wounded."

**COMMISSIONS IN THE MEDICAL CORPS.**—Surgeon General Gorgas announces that the following New England men have been granted commissions in the army medical corps:

John Woods Harvey, first lieutenant, Boston; John A. Hayward, first lieutenant, Portland, Me.; Perez B. Howard, captain, Newtonville, and Henry T. Hutchins, major, Boston.

**VENEREAL DISEASES IN THE GERMAN ARMY.**—Vogel of Breslau has found that though the total incidence of venereal disease in the German army was comparatively low (about 0.3%), syphilis, as compared with gonorrhea, had become more common. The incidence ratio of syphilis to gonorrhea, which was as 1 to 3 or 4, had risen to 1 or 2. Another disquieting fact was the high proportion of married men—a third of the total—among infected soldiers.

**USE OF SALVARSAN IN GERMANY.**—The Reichstag debate, in which the patrons of salvarsan were accused of suppressing salvarsan fatalities, and in which the medical journals were said to be accomplices to the unscrupulous exploitation of this drug, has had a sequel. In an order from the Prussian Minister of the Interior, dermatologists, specialists in venereal diseases, and the heads of medical institutions are required to give a return showing the number of patients treated and of injections given, and the nature and number of the ill effects observed. Information is asked as to the benefits resulting from the treatment of syphilis with salvarsan and its derivatives.

#### BOSTON AND MASSACHUSETTS.

**SCHOOL OF INSTRUCTION FOR HEALTH OFFICIALS.**—At the recent meeting of the Public Health Committee of the Massachusetts Medical

Society, Mr. C. E. Turner, an instructor in the Department of Biology and Public Health of the Massachusetts Institute of Technology, was appointed as their field agent. This position was formerly held by Mr. Edward A. Ingham, now District Health Officer in the State of California.

It is the plan of the Public Health Committee to hold its second Convocation and School of Instruction for Health Officials during the last week in May. This school will be held with the coöperation of the State Department of Health, the Massachusetts Association of Boards of Health and the United States Public Health Service. A comprehensive program is being prepared which will deal with a variety of public health activities, laying special emphasis upon the several movements which are occupying the attention of military and civilian health authorities.

**HOLDEN (MASS.) HOSPITAL.**—The Holden Hospital, Inc., has leased the plant of the Holden Cottage Hospital. The latter has, for the last three and a half years, been conducted as a private institution. The work began under the new management on April 1st.

When the Holden townspeople learned that, because of increasing expense, it would become necessary to discontinue the hospital work, a mass meeting was called, much enthusiasm was manifested and a fund started to equip a hospital within the town.

Because of the present unfavorable building conditions it was decided to take over the plant of the Cottage Hospital for the present. The Board of Directors consists of: William J. Jamieson, Pres.; William H. Warren, Treas.; Harry A. Creamer, Sec.; Rev. James Prendergast; Jefferson W. Coe; Dr. Walter H. Welch; Bertram S. Newell, William Swenson; Rev. George E. Cary; and Rev. James W. Leonard.

**CARNEY HOSPITAL ALUMNI ELECTION.**—The annual meeting and dinner of the Carney Hospital Alumni Association were held at the Hotel Bellevue recently with more than fifty members present. Dr. D. J. Harrington, retiring president, was toastmaster. The principal speakers were Dr. John T. Bottomley and Dr. D. F. Mahoney of the hospital visiting staff, who discussed medical conditions brought about by the present war. The Rev. P. J. Lyons, chaplain of

the hospital, referred to the great assistance given to the hospital by the members of the association and to the number of graduates of the hospital who are now serving in the army and navy.

Dr. P. J. Jakmauh was elected president; Dr. L. E. Phaneuf, vice-president, and Dr. F. G. Minter, secretary-treasurer for the ensuing year.

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### Obituaries.

#### AUGUSTUS CHAPMAN WALKER, M.D.

AUGUSTUS CHAPMAN WALKER, M.D., died at his home in Cambridge, April 5, 1918, aged 84 years. He was born in Barnstead, N. H., on June 9, 1833, the son of Joseph Alcott and Abigail (Murray) Walker. He received his A.M. degree from Dartmouth in 1862 and that of M.D. from the Harvard Medical School in 1866. In September, 1862, Dr. Walker enlisted as an assistant surgeon with the 133d New York Regiment of Volunteer Infantry. He served in that capacity till 1864, when he was transferred to the 18th New York Regiment of Volunteer Cavalry, later serving as surgeon-in-chief of the Cavalry Division stationed at New Orleans, La. He was honorably discharged in June, 1866. He then began the practice of his profession in Greenfield, where he continued for nearly two-score years as an active practitioner.

In his professional career, Dr. Walker had been pension surgeon for the United States Pension Board and he had served as a member of the Massachusetts Board of Registration in Medicine. He was a member of the Franklin District Medical Society, a Fellow of The Massachusetts Medical Society, belonged to the Massachusetts Commandery of the Loyal Legion, the G.A.R., the Masonic fraternity and other organizations.

He married, at Lyme, N. H., on Sept. 11, 1862, Maria Churchill Grant. They removed, after their long residence in Greenfield, to Cambridge, about 10 years ago. Mrs. Walker, who had been prominent as a member of the Daughters of the American Revolution, died last August. Dr. Walker is survived by two sons, Robert T. Walker, of Cambridge, and Sidney G. Walker of Providence, R. I.

## IRVINE A. WATSON, M.D.

IRVINE A. WATSON, M.D., secretary and executive officer of the New Hampshire State Board of Health since its organization in 1881, died recently in Concord, N. H. Dr. Watson was formerly secretary of the American Public Health Association. He was president of the International Conference of State and Provincial Boards of Health in 1903, and was an honorary member of many American and foreign scientific bodies.

Dr. Watson was born in Salisbury, N.H., on Sept. 6, 1849, the son of Porter B. Watson and Luvia E. (Ladd) Watson. His education was received in common schools and at the seminary in Newbury, Vt., and the Collegiate Institute. He studied medicine and attended lectures at the medical schools of Dartmouth College and of the University of Vermont. He began practice, in 1871, in Groveton, N. H., and went to Concord to reside in 1881. He was for some years superintendent of schools in Groveton and had served in the New Hampshire House of Representatives. Other public service had been as secretary of the New Hampshire Commission of Lunacy, as Registrar of Vital Statistics of New Hampshire, and as president of the State Board of Cattle Commissioners. He compiled and edited various reports on medical and sanitary subjects and societies and their work. In 1872 Dr. Watson married Lena A. Farr of Littleton, N. H.

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**Miscellany.**


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## THE BACTERIOLOGY OF POLIOMYELITIS.

THE work of Dr. Horace Greeley on the bacteriology of poliomyelitis, of which preliminary announcements were published in the *Medical Record* of January 13, the *BOSTON MEDICAL AND SURGICAL JOURNAL* of April 12, 1917, and complete details in the *Journal of Laboratory and Clinical Medicine*, July, 1917, has recently been completely corroborated by Dr. E. C. Rosenow<sup>1</sup> and Dr. L. D. Bristol.<sup>2</sup>

It will be remembered that Dr. Greeley grew from the nerve centers of cases succumbing to the 1916 epidemic a pleomorphic bipolar bacillus which he caused to grow as the globoid bodies

described by Flexner and Noguchi, and also in the form of the streptococcus described by Rose now.

Working with cultures obtained from the latter, he developed from Rosenow's "streptococcus" the pleomorphic bacillus. This bacillus, besides being susceptible of modification of form between the globoid bodies, through streptococcus or diplococcus forms to bipolar bacilli, he found also subject to change from Gram-positive to Gram-negative. The fully developed bacillus was found to be motile, with a single terminal flagellum, would liquefy solidified serum, produce an acid reaction in neutral bouillon and develop spores. Five out of six strains isolated by Dr. Greeley failed to produce gas in sugar media; three out of the six produced a slight amount of indol. He found that the organism would pass the Berkefeld filter and would grow at all temperatures between summer heat (70° F.) and that of the body.

Dr. Greeley's cultures grew readily in market milk, and in it resisted the pasteurization process.

Experimenting on animals, he produced paralysis with nerve center lesions, in dogs, cats, rabbits, and guinea-pigs, and also typical attacks of distemper in young dogs and cats. A culture accidentally dropped in the experimenter's eye produced an abortive case of the malady, and mucus from his throat produced paralysis in a rabbit and a contagious fatal disease with nerve center hemorrhagic manifestations among guinea-pigs.

Dr. Greeley tested the organisms isolated with blood serum from fifty convalescents of the 1916 epidemic and found that, while agglutination was ordinarily not produced in high dilution, a specific relation was evident. In animals (cats) he produced antipoliomyelitis sera that agglutinated in high dilution the cultures used to produce them, but varied considerably in agglutination of other cultures (strains).

Using this specific serum and sera from human poliomyelitis convalescents, he showed that a distinct relationship existed between the poliomyelitis bacilli and a bacillus isolated from a case of distemper in a dog.

Dr. Rosenow now states that he finds that his "streptococcus" will produce the bacillus form, and Dr. Bristol, working with one of Flexner's cultures, obtained from the Rockefeller Institute, developed from the globoid bodies bacilli such as Dr. Greeley described. Dr. Bristol concludes:

"From these studies I venture to suggest the possibility that the organism of poliomyelitis is a pleomorphic bacillus (often indistinguishable, however, from a true coccus) and that it may be closely related to the large group of so-called bipolar bacilli, or Pasteurella."

"Based on this assumption, the mode of spread may be considered analogous to that demonstrated for all forms of Pasteurellosis in animals, namely: (1) directly, by contact with the secretions or excretions of an infected individual (either diseased or a healthy 'carrier'); (2) indirectly, by the carriage of the specific organisms by insects, or possibly in dust, uncooked food, or drink."

This is practically the same conclusion announced by Dr. Greeley some six months previously:

"It is demonstrated that the organism isolated from the nerve centers of cases of poliomyelitis (including the 'streptococcus' described by various observers) is a pleomorphic bacillus of the distemper group, which varies in characteristics much as the various, supposedly different, members of the group do from one another; that this poliomyelitis bacillus could cause paralysis in cats, dogs, rabbits and guinea-pigs, and that an accidental passage of a culture through man gave rise to abortive symptoms of the malady; that after this last-named passage it could produce paralysis in a rabbit and a contagious infection of guinea-pigs, with nerve centre lesions; and, finally, that from the guinea-pigs it could produce distemper in cats."

"Further, it is shown that the organism is saprophytic and grows well in milk at 'summer heat'; and that it resists the pasteurization process, while contained therein. Also, that it forms 'spores' and is a 'filter passer.'"

"It seems very probable that, while contact cases of poliomyelitis may occur, either by direct transmission of the germ from animal to man, or from man to man, the great mass of cases which comprise epidemics are caused by milk-borne contagion and, furthermore, we shall have to regard our cows as possible 'carriers' of the infection. It is, of course, evident that infection could get into milk from other animals, as the cat and dog, or even from a human carrier."

#### REFERENCES.

- <sup>1</sup> American Journal of Public Health, December, 1917.  
<sup>2</sup> Journal of Mental Research, January, 1918.

#### ARMY MEDICAL CORPS EXAMINATIONS.

The Surgeon-General of the Army announces that preliminary examinations for the appointment of first lieutenants in the Medical Corps, U. S. Army, are being held at numerous points throughout the United States, on the first Monday of each month.

Full information concerning the examination may

be procured upon application to the "Surgeon-General, U. S. Army, Washington, D. C." The essential requirements to securing an invitation to report for examination are that the applicant shall be a citizen of the United States, between 22 and 32 years of age, a graduate of a medical school legally authorized to confer the degree of Doctor of Medicine, of good moral character and habits, and shall have had at least one year's post-graduate hospital internship.

The Government cannot pay to applicants any portion of their expenses incurred in connection with their examination, and due consideration, therefore, will be given to localities from which applications are received, in order to lessen such expenses as much as possible.

Chemistry and Physics have been eliminated as subjects of the examination.

Those applicants who successfully pass the examination are commissioned first lieutenants in the Medical Reserve Corps, and sent to either the Army Medical School in Washington, or to a training camp for a course of instruction, covering a period of approximately three months, during which time they draw the pay and allowances of their grade. If, at the close of their instruction, they pass the final examination, and are favorably recommended, they are commissioned first lieutenants in the Medical Corps of the Regular Army.

The Medical Corps consists of commissioned officers in number approximately equal to seven for every one thousand of the total enlisted strength of the Regular Army authorized from time to time by law, proportionally distributed among the graded and in the ratios as follows: Colonels, 3.16%, lieutenant-colonels, 5.42%, majors, 23.7%; captains and first lieutenants, 67.72%.

Promotion to the grades of major, lieutenant-colonel, and colonel is by seniority, subject to examination.

The Surgeon-General, who, under the permanent law, has the rank of brigadier-general and is the chief of the Medical Department, is selected from among the officers of the Medical Corps not below the grade of lieutenant-colonel.

#### PAY AND EMOLUMENTS.

To each rank is attached a fixed annual salary, which is received in monthly payments, and this is increased by 10% for each period of 5 years' service until a maximum of 40% is reached. A first lieutenant receives \$2300 per annum, or \$191.66 monthly. At the end of five years (during the period of the war, at the end of one year) he is promoted to captain, subject to examination, and receives \$2400 a year, with an increase of 10% after five years' service, making \$2640, or \$220 per month. After 10 years' service the pay would be \$2880 annually, or \$240 per month. The pay attached to the rank of major is \$3000 a year, which, with 10% added for each five years' service, becomes \$3600 after 10 years' service, \$3900 after 15 years' service, and \$4000 after 20 years. The maximum monthly pay of lieutenant-colonel, colonel, and brigadier-general is \$375, \$416.66, and \$500, respectively. Officers, in addition to their pay proper, are furnished with allowance of quarters according to rank, either in kind, or, where no suitable Government building is available, by commutation; fuel and light therefore are also provided. When traveling on duty an officer receives mileage for the distance traveled, including the travel performed in joining first station after appointment as first lieutenant. On change of station he is entitled to transportation for professional books and papers and a reasonable amount of baggage at Government expense. Groceries and other articles may be purchased from the commissary at about wholesale cost price. Instruments and appliances are furnished for the use of medical officers in the performance of their duties. Well-selected professional libraries are supplied to each

hospital, and standard modern publications on medical and surgical subjects, including medical journals, are added from time to time. At each military post there is also a laboratory, and medical officers are encouraged to carry on any special line of professional study which appeals to them and which fits them for their duties as medical officers.

Officers of the Medical Corps are entitled to the privilege of retirement after 40 years' service, or at any time for disability incurred in the line of duty. On attaining the age of 64, they are placed on the retired list by operation of law. Retired officers receive three-fourths of the pay of their grade (salary and increase) at the time of retirement.

At the present time there are approximately seven hundred vacancies in the Medical Corps.

#### UNITED STATES CIVIL SERVICE EXAMINATION.— Pathologic physiologist (male). May 7, 1918.

The United States Civil Service Commission announces an open competitive examination for pathologic physiologist, for men only. A vacancy in the Hygienic Laboratory, Public Health Service, Washington, D. C., at \$3900 a year, and future vacancies requiring similar qualifications at this or higher or lower salaries, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

The duties of the appointee will be to study the pathology of industrial poisoning, with special reference to the manufacture of munitions.

Competitors will not be required to report for examination at any place, but will be rated on the following subjects, which will have the relative weights indicated, on a scale of 100: (1) Education, 30; (2) Experience, 40; (3) Publications (to be submitted with application), 30.

Under the first and second subjects competitors will be rated upon the sworn statements in their applications, and upon corroborative evidence adduced by the Commission.

A degree of M.D., from an institution of recognized standing, and at least two years' postgraduate experience in pathologic physiology, are prerequisites for consideration for this position.

Applicants will be admitted to this examination regardless of their residence and domicile, but those desiring permanent appointment to the apportioned service in Washington, D. C., must have been actually domiciled in the State or Territory in which they reside for at least one year previous to the date of the examination, and must have the county officer's certificate in the application form executed. Positions in the Hygienic Laboratory of the Public Health Service are in the non-apportioned service.

Applicants must have reached their twenty-first birthday on the date of the examination.

Applicants must submit with their applications their photographs, taken within two years. Tin-types or proofs will not be accepted.

This examination is open to all male citizens of the United States who meet the requirements.

Applicants should at once apply for Form 2118, stating the title of the examination desired, to the Civil Service Commission, Washington, D.C.; the Secretary of the United States Civil Service Board, Customhouse, Boston, Mass.; New York, N. Y.; New Orleans, La.; Honolulu, Hawaii; Post Office, Philadelphia, Pa.; Atlanta, Ga.; Cincinnati, Ohio, Chicago, Ill.; St. Paul, Minn.; Seattle, Wash.; San Francisco, Cal.; Old Customhouse, St. Louis, Mo.; Administration Building Balboa Heights, Canal Zone; or the Chairman of the Porto Rican Civil Service Commission, San Juan, P. R.

Applications should be properly executed, extending the medical certificate, and must be filled with the Civil Service Commission, Washington, D.C., with the material required, prior to the hour of closing business on May 7, 1918.

#### UNITED STATES CIVIL SERVICE EXAMINATIONS.— Stenographers and typewriters wanted, men and women.

The United States Government is in urgent need of thousands of typewriter operators and stenographers and typewriters. All who pass examinations for the departments and offices at Washington, D.C., are assured of certification for appointment. It is the manifest duty of citizens with this special knowledge to use it at this time where it will be of most value to the Government. Women especially are urged to undertake this office work. Those who have not the required training are encouraged to undergo instruction at once.

Examinations for the Departmental Service, for both men and women, are held every Tuesday, in 450 of the principal cities of the United States, and applications may be filed with the Commission at Washington, D. C., at any time.

The entrance salary ranges from \$1000 to \$1200 a year. Advancement of capable employees to higher salaries is reasonably rapid.

Applicants must have reached their eighteenth birthday on the date of the examination.

For full information in regard to the scope and character of the examination and for application blanks, address the U. S. Civil Service Commission, Washington, D. C., or the Secretary of the U. S. Civil Service Board of Examiners at Boston, Mass.; New York, N. Y.; Philadelphia, Pa.; Atlanta, Ga.; Cincinnati, Ohio; Chicago, Ill.; St. Paul, Minn.; St. Louis, Mo.; New Orleans, La.; Seattle, Wash.; San Francisco, Cal.; Honolulu, Hawaii; or San Juan, Porto Rico.

JOHN A. McILHENNY,  
President, U. S. Civil Service Commission,  
Washington, D. C.

### Correspondence.

#### REGULATION OF THE PRACTICE OF MEDICINE.

Commonwealth of Massachusetts.  
Board of Registration in Medicine.  
Room 501, No. 1, Beacon Street,  
Boston, March 28, 1918.

*Mr. Editor:*

Since physicians as a class seem to take but little interest in laws regulating the practice of medicine, or in efforts made to enforce these laws, it seems desirable to call attention to the provisions of Chapter 55 and of Chapter 218 of the General Acts of the year 1917, with the hope of securing the cooperation of the profession.

Under the provisions of these Acts, the Board of Registration in Medicine may revoke or suspend certificates of registration, as shown in the following excerpts:

"Said Board, after hearing, may by unanimous vote revoke any certificate issued by it and cancel the registration of any physician who has been convicted of a felony or of any crime in the practice of his profession; or after hearing may by unanimous vote revoke any certificate issued by it and cancel the registration of any physician, for a period of not exceeding one year, who has been shown at such hearing to have been guilty of gross and confirmed use of alcohol in any of its forms while engaged in the practice of his profession, or of the use of narcotic drugs in any way other than for therapeutic purposes; or to have published, or caused to be published, or to have distributed, or caused to be distributed, any literature contrary to the provisions of chapter three hundred and eighty-six of the acts of the year nineteen hundred and eight; or to have acted as principal or assistant in carrying on the practice of medicine



by an unregistered person, or by any person who has been convicted of the illegal practice of medicine, or by any registered physician whose license has been revoked either permanently or temporarily, or to have aided or abetted in any attempt to secure registration, either for himself or for another by fraud, or in connection with his practice, to have defrauded or attempted to defraud any person.

"The boards of registration in medicine, dentistry, pharmacy and veterinary medicine, after a hearing, may, by a majority vote of the whole board, suspend, revoke or cancel any certificate, registration, license or authority issued by the board, if it appears to the board that the holder of such certificate, registration, license or authority, is insane, or is guilty of deceit, malpractice, gross misconduct in the practice of his profession, or of any offense against the laws of the commonwealth relating thereto. Any person whose certificate, registration, license or authority is suspended or revoked hereunder shall also be liable to such other punishment as may be provided by law. The different boards may make such rules and regulations as they deem proper for the filing of charges and the conduct of hearings."

Under these provisions of law, the Board has revoked, or suspended, the registration of physicians, for performing abortions, gross and confirmed use of alcohol, the illegal prescribing of narcotic drugs, the publishing of improper literature, for acting as an associate to an unregistered practitioner, and for deceit and misconduct in the practice of the profession.

The Board finds that a considerable number of physicians are covering the work of midwives by signing birth returns without having been in attendance. Evidence is accumulating which will result in the calling of such practitioners before this Board, and if the complaints against them are verified, all such men stand in danger of losing their right to practise.

The passage of these Acts last year, as referred to above, has improved conditions in medical practice in this state to a considerable extent, and several irregulars have ceased practice because of the impossibility of having legally registered practitioners to cover them.

Aside from midwives, unregistered impostors are doing very little work in this State now, and when the medical profession will provide for the adequate care of obstetric cases within the means of those people who now employ midwives, the situation can be very much improved.

All acts of illegal practice coming under the observation of physicians should be reported to the local prosecuting officials, but if any one feels that he may not properly do this, the Board will see that the facts are reported to the police departments without involving private individuals.

But the menace of the incompetent practitioner still exists, for a strong effort was made this year to have the Legislature enact into law a bill which would have permitted a man who has failed to secure registration, to have engaged in practice. This man formerly conducted a very lucrative medical practice. The petition for this bill was signed by a former governor of this Commonwealth, but the Committee on Public Health reported adversely, and the measure failed to secure sufficient support.

There is another matter of considerable importance which should interest the profession.

For several years complaints have been made that a certain medical college in this State has not been conducting its work in conformity with its published announcements: that students have been coerced into paying fees which could not be properly charged; that many of its graduates do not show evidence of having been properly taught; that the Council on Education of the American Medical Association does not recognize this school; and that thirty-nine States of the Union will not even admit the graduates of this school to make applications for licensure. These assertions and facts led the Attorney-Gen-

eral to recommend to the Legislature that the charter of this school be revoked, and the Assistant District Attorney of Suffolk County appeared at a legislative hearing and argued in support of the recommendation of the Attorney-General. But medical men of standing appear to take little interest in influencing legislation to prevent this questionable school from doing business. As it now stands, Massachusetts is legally endorsing an institution which is discredited by thirty-nine other States, and by the official Committee of the American Medical Association, and permits it to continue to induce young people to waste time and money for a comparatively worthless education and a degree which is of very little value.

It is generally felt that the medical profession is responsible for the maintenance of preventive medicine. One may question whether it can justly ignore the responsibility of trying to maintain reputable standards of medical education.

The greatest efficiency in all public health measures and preventive medicine must come from high-grade medical education, for the well-trained doctor in private practice is often the indispensable factor in promoting the methods of authorities, and it has sometimes been found that the low-grade medical men are obstacles in the path of progress.

Improvement in conditions relating to medicine would take place more rapidly if the profession would exert its full influence upon our law-makers.

WALTER P. BOWERS,

Secretary Board of Registration in Medicine.

#### A CHILDREN'S PAVILION AT THE SHARON SANATORIUM.

April 4, 1918.

Mr. Editor:

May I through the medium of your columns bring to the attention of the medical profession and others the proposed opening of the new "Children's Pavilion,"—the most recent and much-needed addition to the Sharon Sanatorium at Sharon, Mass., now in the twenty-seventh year of its existence? The pavilion is intended to be a combined sanatorium and school for debilitated children with suspected tuberculosis, and for those who are in the earliest stages of pulmonary or glandular tuberculosis, and not for surgical cases.

The class of patients to be received will be children of people of refinement, with moderate incomes; neither the very poor nor the rich. With the recognized tendency of latent tuberculosis in children to become active in later life, the Directors of the Sanatorium now wish to increase its usefulness by receiving this type of patient, as a means of prevention as well as cure. For twenty-seven years it has been the means of bringing back health to hundreds of women of limited means afflicted with tuberculosis. It now enlarges its scope of work by this recent addition for children, and thus will help to meet a great need in our community.

The moderate price of ten dollars a week, exclusive of laundry, will be charged. It will be easily understood that the price of board is quite inadequate to meet the annual deficit, as has been the case in the past. Generous public help, therefore, is still urgently solicited, especially in these trying times, when home charities have to suffer a loss of income on account of the war.

The formal opening of the Pavilion will take place early in June, the exact date to be announced later. Anyone who desires to see the Sanatorium now will be cordially received at Sharon by the Superintendent, Dr. Walter A. Griffin. Applications for admission to the Pavilion should be addressed to him or to the medical members of the corporation: Dr. Henry I. Bowditch, 86 Bay State Road, or myself at 506 Beacon Street, Boston.

Very truly yours,

VINCENT Y. BOWDITCH.

# TOXICITY OF ARSPHENAMINE AND NEO-ARSPHENAMINE.

Treasury Department,  
United States Public Health Service.

*Mr. Editor:* Washington, April 5, 1918.  
In view of the reports in current medical literature of untoward results from the use of arspenamine and neo-arsphenamine, I have to request that you give publicity to the statement that it is requested that samples of any lots of these arsenicals which have shown undue toxicity be forwarded to the Hygienic Laboratory for examination.

In sending these samples it should be ascertained that the lot number is the same as that of the ampules used on patients. The samples sent should, if possible, be accompanied by a brief note stating the approximate body weight and age of the patient, the dose and dilution of the drug given, the symptoms and result, that is, whether fatal or not.

Respectfully, G. W. McCoy, Director.

## MORE MEDICAL OFFICERS NEEDED IN THE ARMY AND NAVY.

*Mr. Editor:*—Boston, April 15, 1918.  
The following telegram has been received from Major Simpson of the Council of National Defense, Medical Section, at Washington. Physicians are urged to make application for service at the earliest possible moment, sending their applications to the Surgeon General of the Army or the Surgeon General of the Navy, Washington, D. C.

Washington, D.C.,  
April 13, 1918.  
282 Newbury St., Boston, Massachusetts.

An urgent need exists for several thousand additional medical officers in the Army and Navy, some for immediate work, some for training, and others to be held in reserve. Please urge your State and County Committees to speed up enrollment as effectively as possible.

F. F. Simpson,

Major, Medical Reserve Corps.

Very truly yours,

J. B. BLAKE, Chairman,  
W. L. BURRAGE, Secretary,  
Massachusetts State Committee,  
Council of National Defense,  
Medical Section.

## NOTICES.

THE CUTLER LECTURES ON PREVENTIVE MEDICINE AND HYGIENE.—By Frederic S. Lee, A.M., Ph.D., Professor of Physiology, College of Physicians and Surgeons, Columbia University, New York, on "Industrial Efficiency and the War." Thursday, April 25, 1918, and Friday, April 26, 1918, at the Harvard Medical School Amphitheatre, Building E, 5 to 6 p.m.

These lectures are given annually under the terms of a bequest from John Clarence Cutler, whose will provided that the lectures so given should be styled the Cutler Lectures on Preventive Medicine, and that they should be delivered in Boston, and be free to the medical profession and the press.

All members of the classes in the Medical School, the medical profession, the press, and others interested are cordially invited to attend.

TWO MORPHINE HABITUÉS.—The attention of physicians is called to the case of two morphine habitués who have been reported to the JOURNAL as making a round of doctors' offices in the effort to obtain their drug.

The first is a young man of short stature and with a round, florid face. He has a ventral hernia and complains of abdominal pain. He does not ask for morphina but simulates extreme pain so well as to suggest the administration of morphia for his relief.

The second case is that of a well-dressed, middle-aged woman of ladylike manner. She has dark hair

and is very pale and extremely nervous. In the reported instance she waited in a doctor's office until an opportunity occurred when every one was out of the room; then took some morphia from his bag, and left.

Other physicians in the city should be on the watch for these persons in order, if possible, to place them under suitable conditions for the treatment of their addiction.

## SOCIETY NOTICES.

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY.—The annual meeting of the Society will be held at the American House, Boston, on Wednesday, April 17, 1918, at 11.00 A.M. The annual oration will be delivered at 12.00 o'clock, noon, by Dr. Frank L. Morse of Somerville. Subject: "The Control of Communicable Diseases." LYMAN S. HAPGOOD, Secretary.

N. B. Members are reminded that, by vote of the Society, the annual dinner will be omitted this year. For the convenience of those coming from a distance or any who so desire, arrangements have been made so that an informal lunch may be obtained at the hotel after the oration.

Officers: President, George T. Tuttle, Waverley; Vice-President, Herman T. Baldwin, Chestnut Hill; Secretary, Lyman S. Hapgood, Cambridge; Treasurer, Frank W. Plummer, Malden; Commissioner of Trials, Lewis M. Palmer, Framingham; Orator, Frank L. Morse, Somerville; Censors, E. Stanley Abbot, Waverley, Supervisor; Frederick W. Rice, Brighton; Charles E. Hills, South Natick; Frank L. Morse, Somerville; Frederick J. Goodridge, Cambridge.

NEW ENGLAND PHYSICAL THERAPEUTIC ASSOCIATION.—The next regular meeting of the New England Physical Therapeutic Association will be held at the Hotel Brunswick, Boston, Mass., Tuesday, April 23, 1918, at 8 p.m.; dinner at 6 p.m. Dr. H. W. Marshall, of Boston, will read a paper on "Structural Deformities versus Functional Efficiencies as Objects of Treatments."

All members of the medical profession are cordially invited to this meeting.

FRANK E. STOWELL, M.D., President;  
FRANK B. GRANGER, M.D., Treasurer;  
FREDERICK H. MORSE, M.D., Secretary.

SUFFOLK DISTRICT MEDICAL SOCIETY.—The annual meeting will be held on Wednesday, April 24, 1918, at the Boston Medical Library, at 8.15 P.M.

Business meeting: Reports of officers and committees, election of officers, incidental business.

The paper of the evening will be by Dr. Eugene Kelley, State Commissioner of Health, on "The State Venereal Disease Program."

Guests will be welcome at the second part of the meeting, which will begin at about 8.45 P.M.

GILBERT SMITH, Secretary.

## CENSORS' EXAMINATIONS.

The Censors of the Suffolk District Medical Society will meet to examine candidates for admission to Massachusetts Medical Society, at 8 The Fenway, on Thursday, May 2, 1918, at 4 P.M.

Candidates, who must be residents of the Suffolk District or non-residents of Massachusetts, should make personal application to the Secretary and present their medical diplomas, at least one week before the examination.

For further particulars, apply from 2 to 5 P.M. to GILBERT SMITH, Secretary.

99 Commonwealth Avenue.  
The Censors of the Worcester District Medical Society will meet for examination of candidates for fellowship, Thursday, May 2, 1918, at 4 P.M., in the Reference Department, Worcester Public Library. Candidates should make application to the undersigned a week before that date.

ERNEST L. HUNT, Secretary.